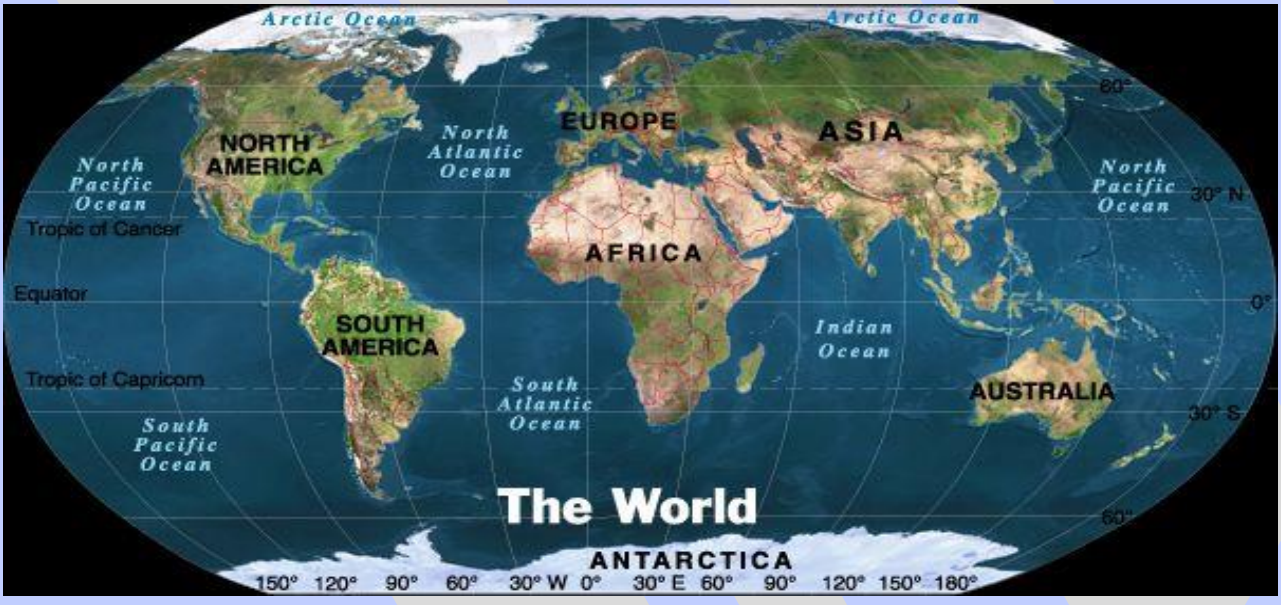
MGT. 205A



Daniel J.B. Mitchell

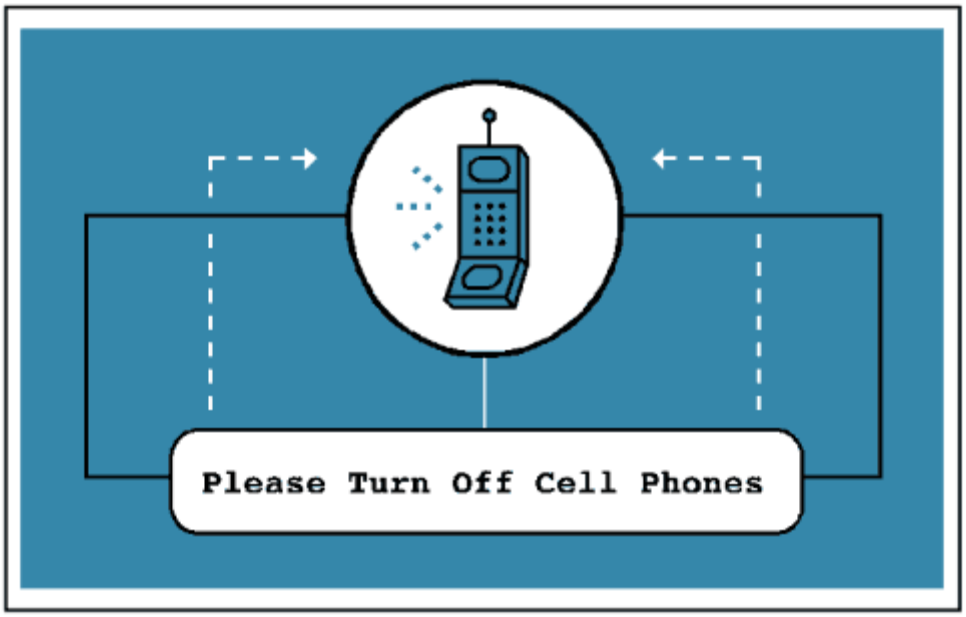
Ho-su Wu Professor

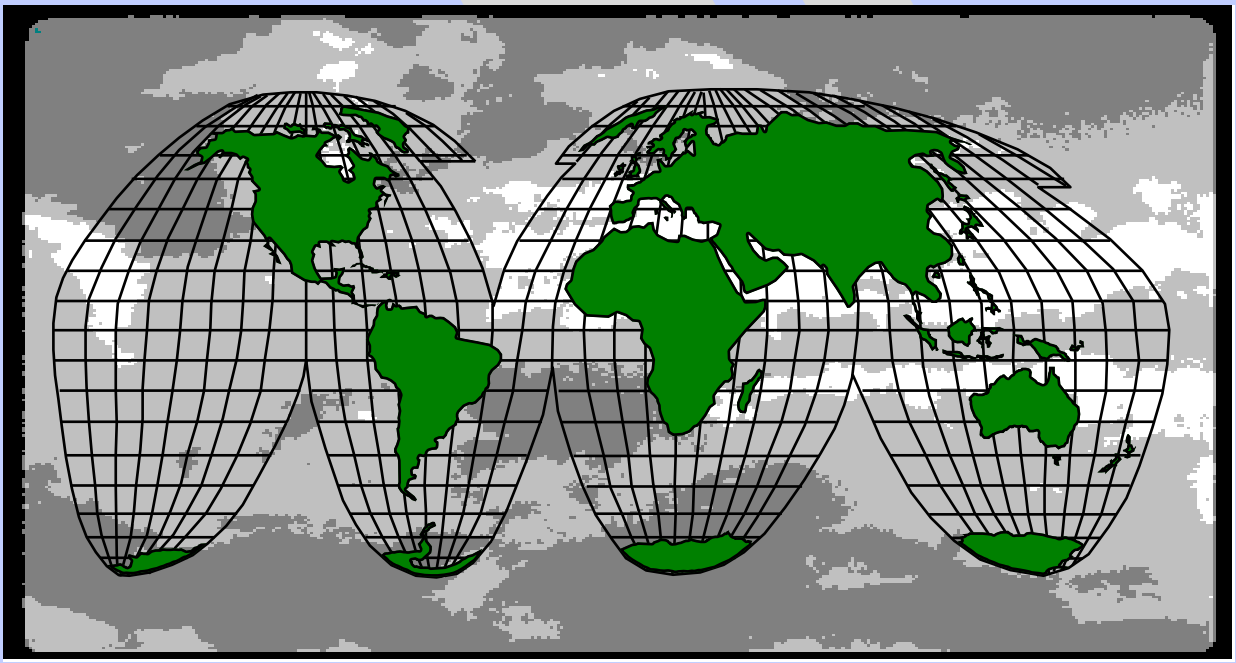
Anderson School

and

School of Public Affairs

Reminder





Electronic and Paper Submission: Week 9

my.ucla.edu

The (Good) Writing Guidelines

Spellcheck

Headings, etc.

Page numbers

Rule of 3 for sentences and paragraphs

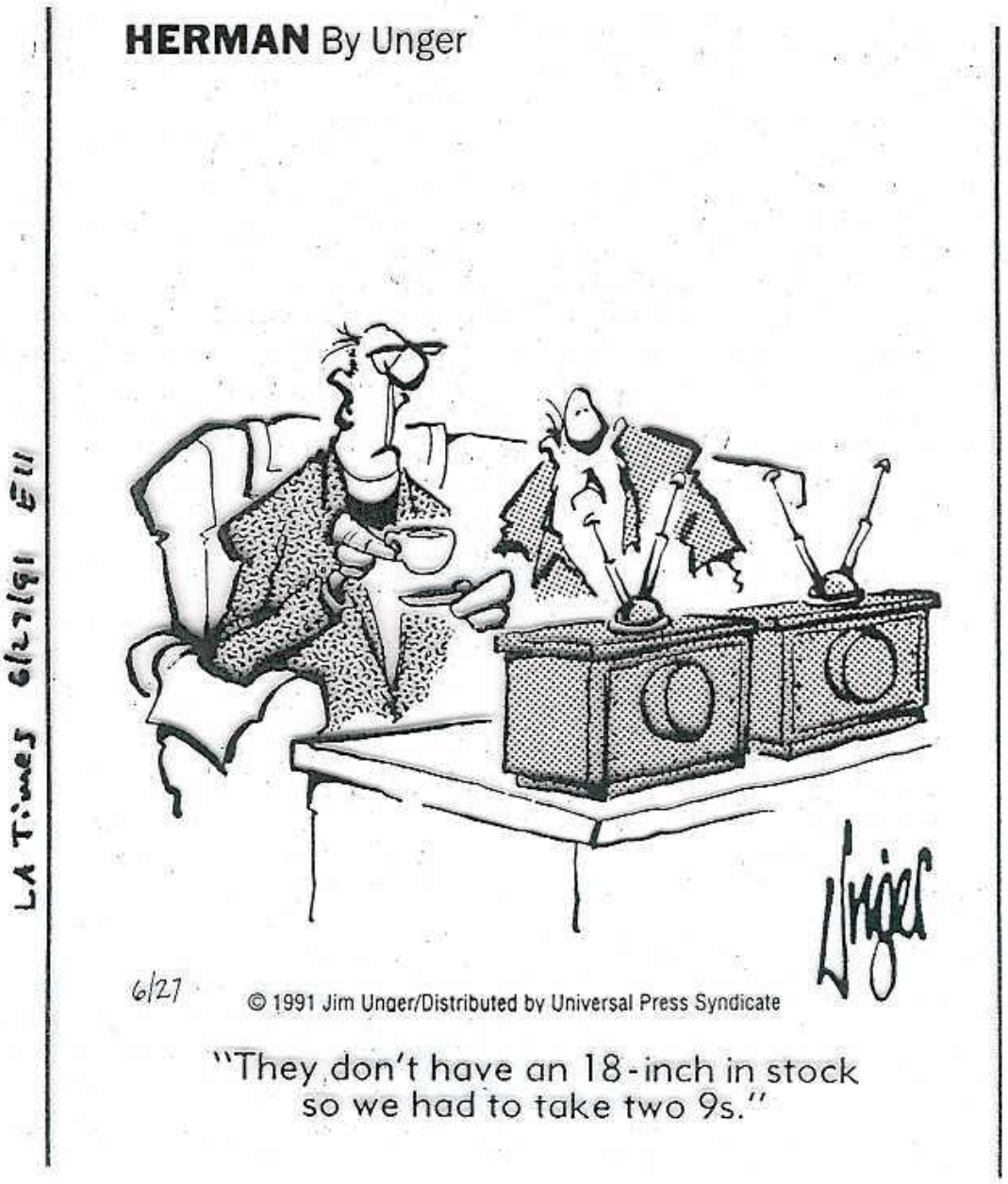
Proper use of introduction and conclusion

Foreign Exchange Market Terminology

Arbitrage:

No risk profits based on price discrepancies between markets.

In equilibrium, equivalent alternatives should be of equal value or there is room for arbitrage.


HERMAN By Unger
LA Times 6/27/91 E11
6/27
© 1991 Jim Unger/Distributed by Universal Press Syndicate
"They don't have an 18-inch in stock so we had to take two 9s."

Arbitrageur?
Bad terminology!

Wall Street arbitrageur convicted of insider trading in 1987. Served two-year prison term and paid $100 million to settle civil lawsuits. (Photo caption in USA Today, 6/12/02)

Simple Case of Arbitrage:

***Suppose you observe that at a moment in time:**

$3 = £1

£1 = *ƒ*10

and $3 = *ƒ*11

($1 = *ƒ*3.6666..)

***What should you do?**

Simple Case of Arbitrage:

***Suppose you observe that at a moment in time:**

$3 = £1

£1 = *f*10

and $3 = *f*11

***What should you do?**

$3

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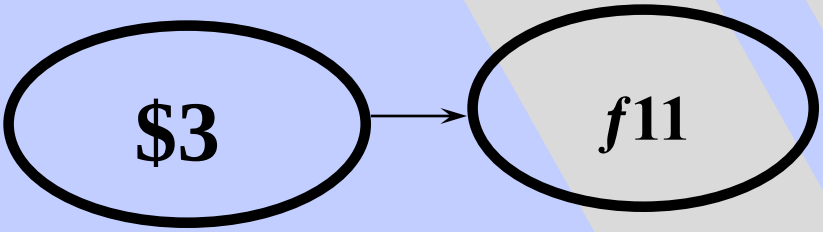

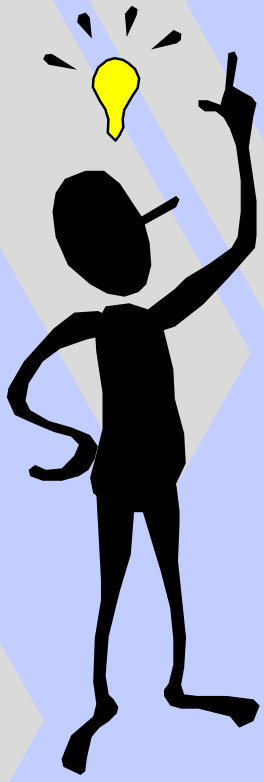

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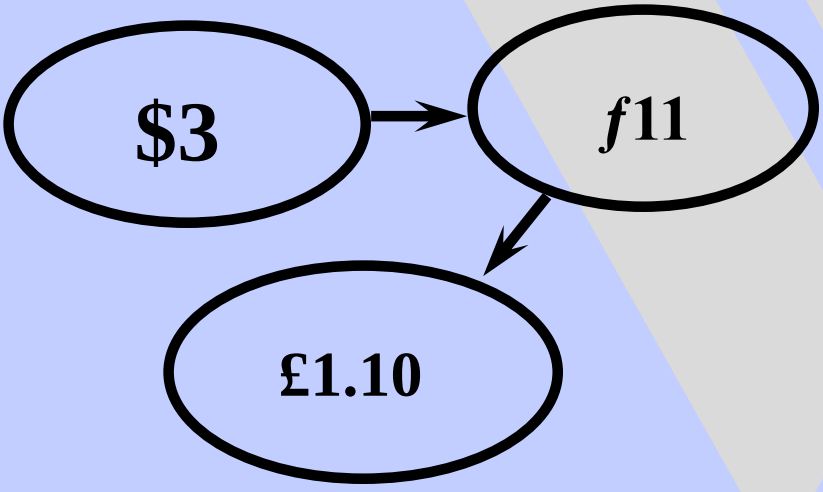

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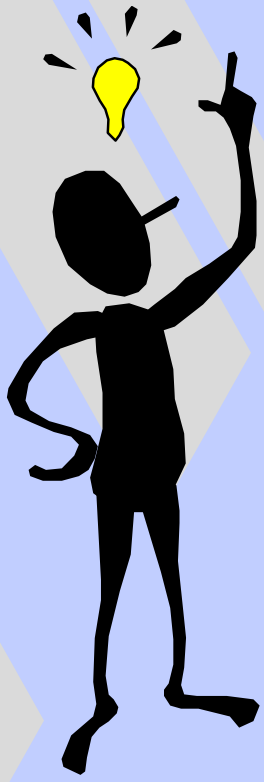

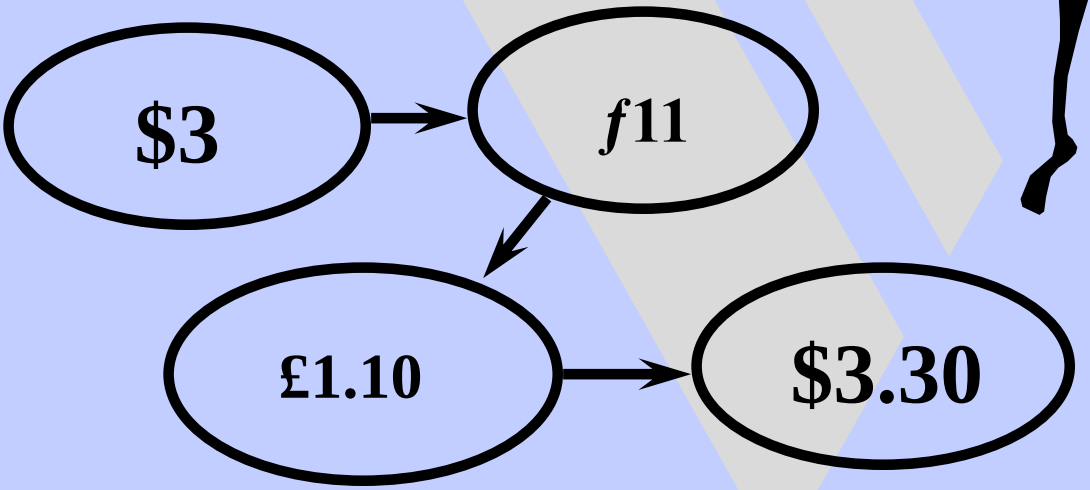

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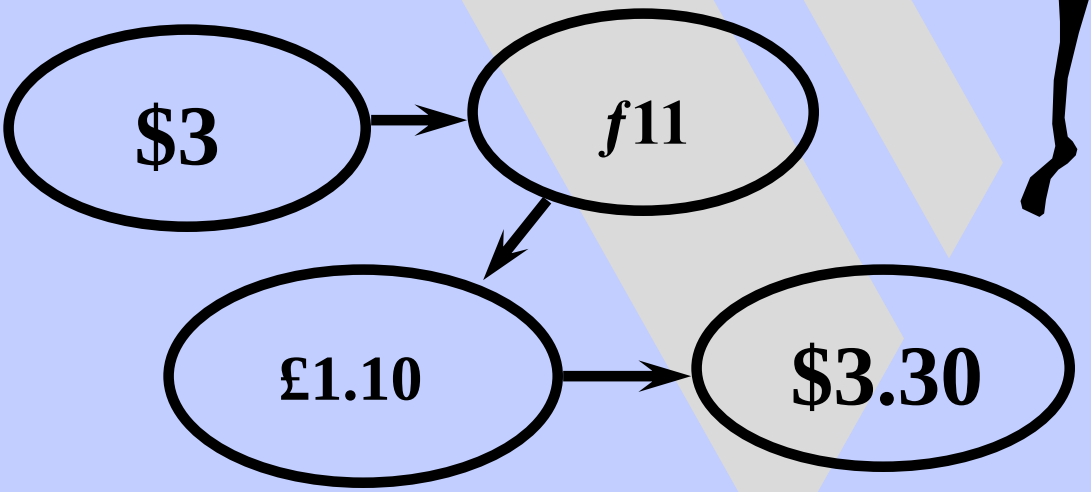


Brokerage fee effects?

Spot vs. Forward Rates

Type of rate:	When agreed upon:	When carried out:
1) Spot rate today	Today	Today
2) 90-day forward rate today	Today	90 days from today
3) Spot rate that will exist 90 days from today	90 days from today	90 days from today
4) Spot rate expected today to exist 90 days from today	Today's view	--

Relation between #4 and #2?

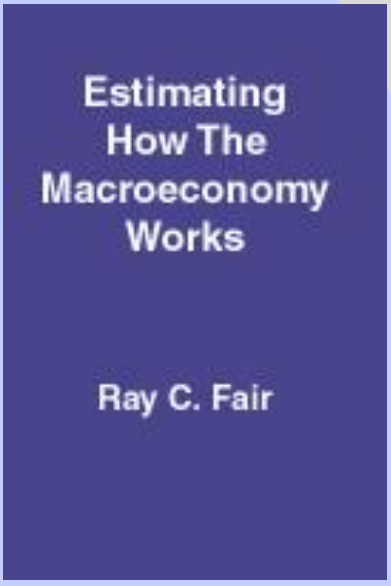
Relation between #2 and #1?

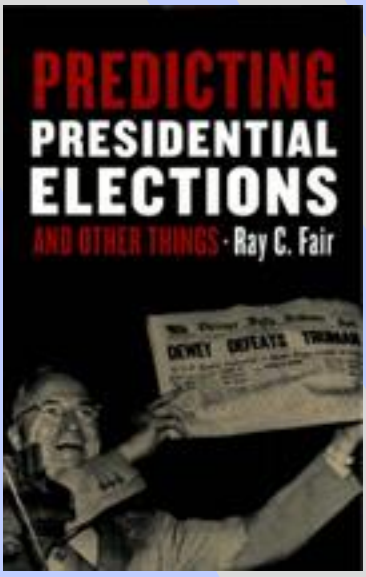
Relation between #4 and #3?

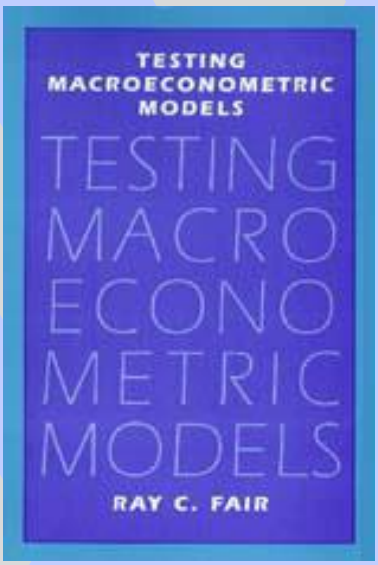
The Ray Fair Test: Do You Understand?

Spot

Forward



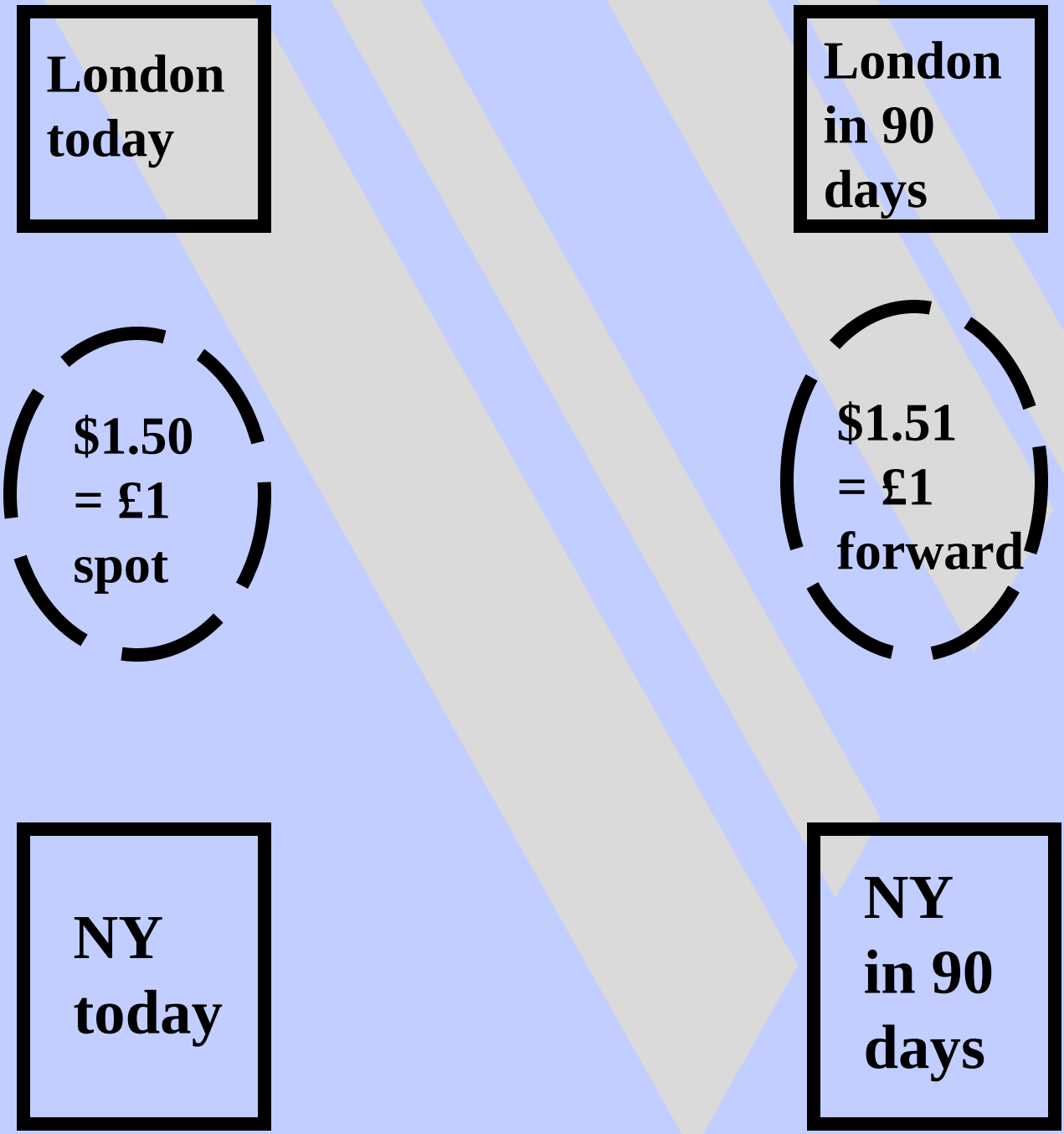




Hedging

- Transaction to reduce or eliminate exchange rate risk
- Route #1: Via spot market
- Route #2: Via forward market
- What should be relation between route #1 and route #2?

Case 1: Interest rates are 2%/90 days in New York and London and you have $1.50 in NY to invest risklessly



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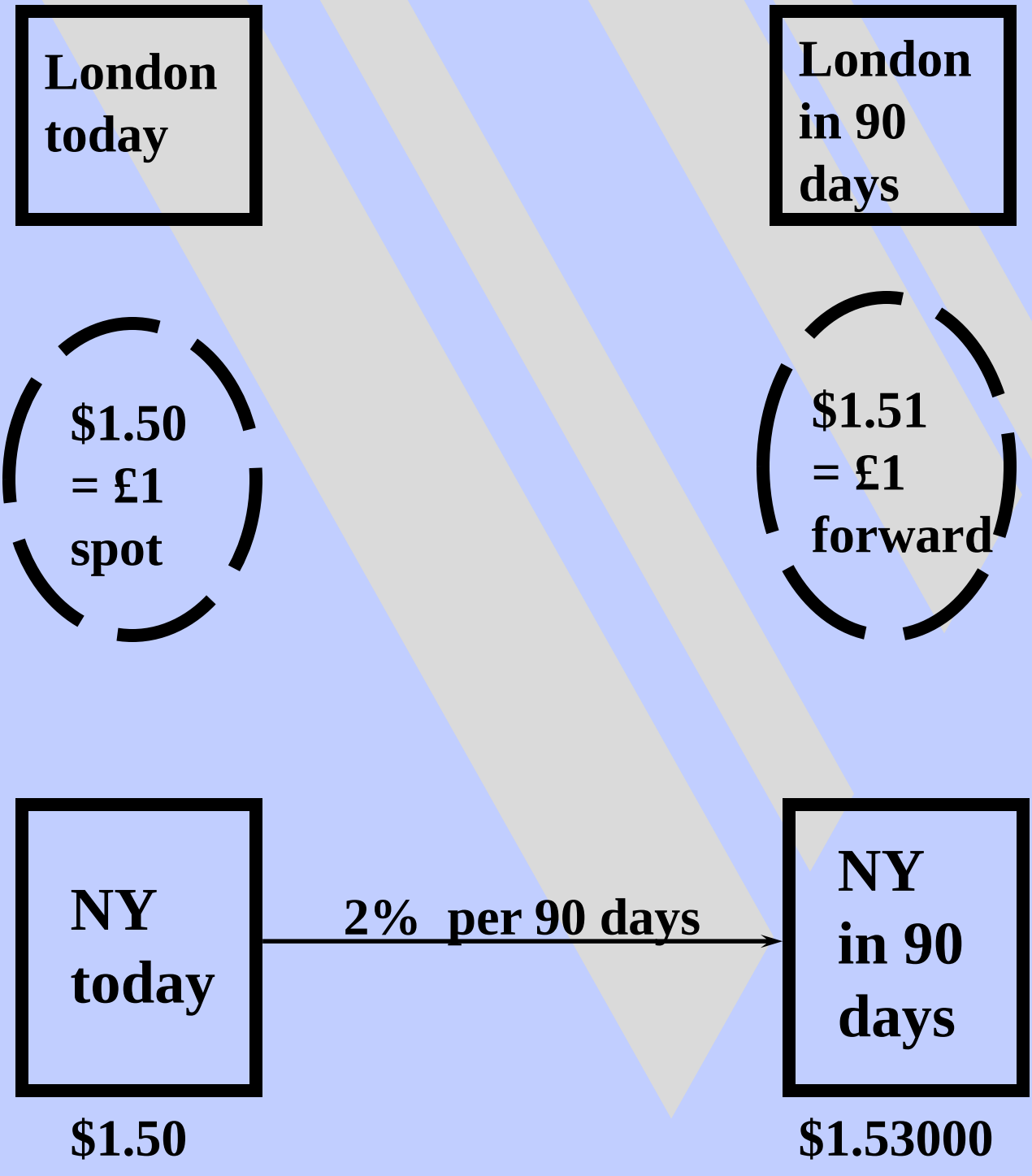

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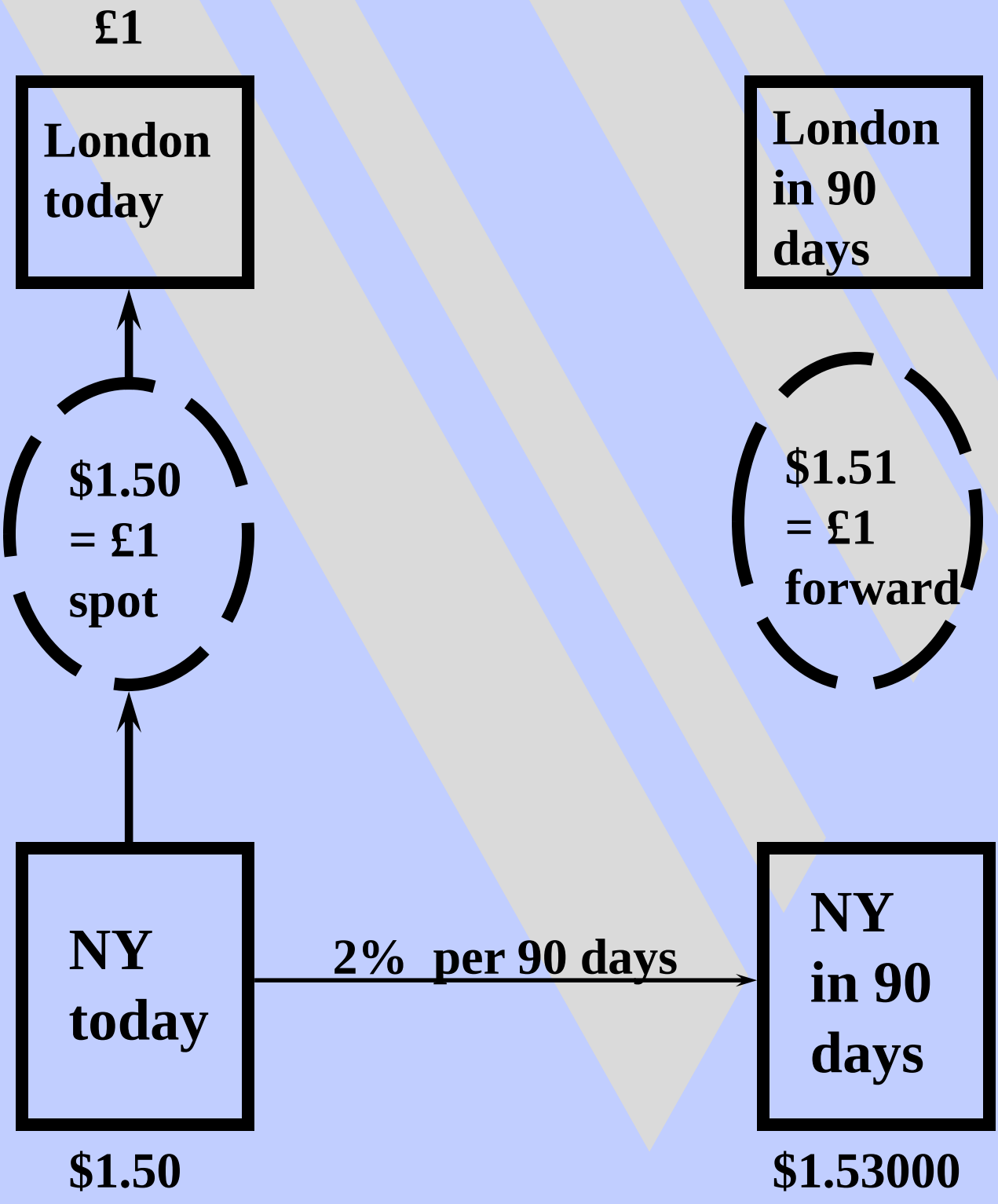

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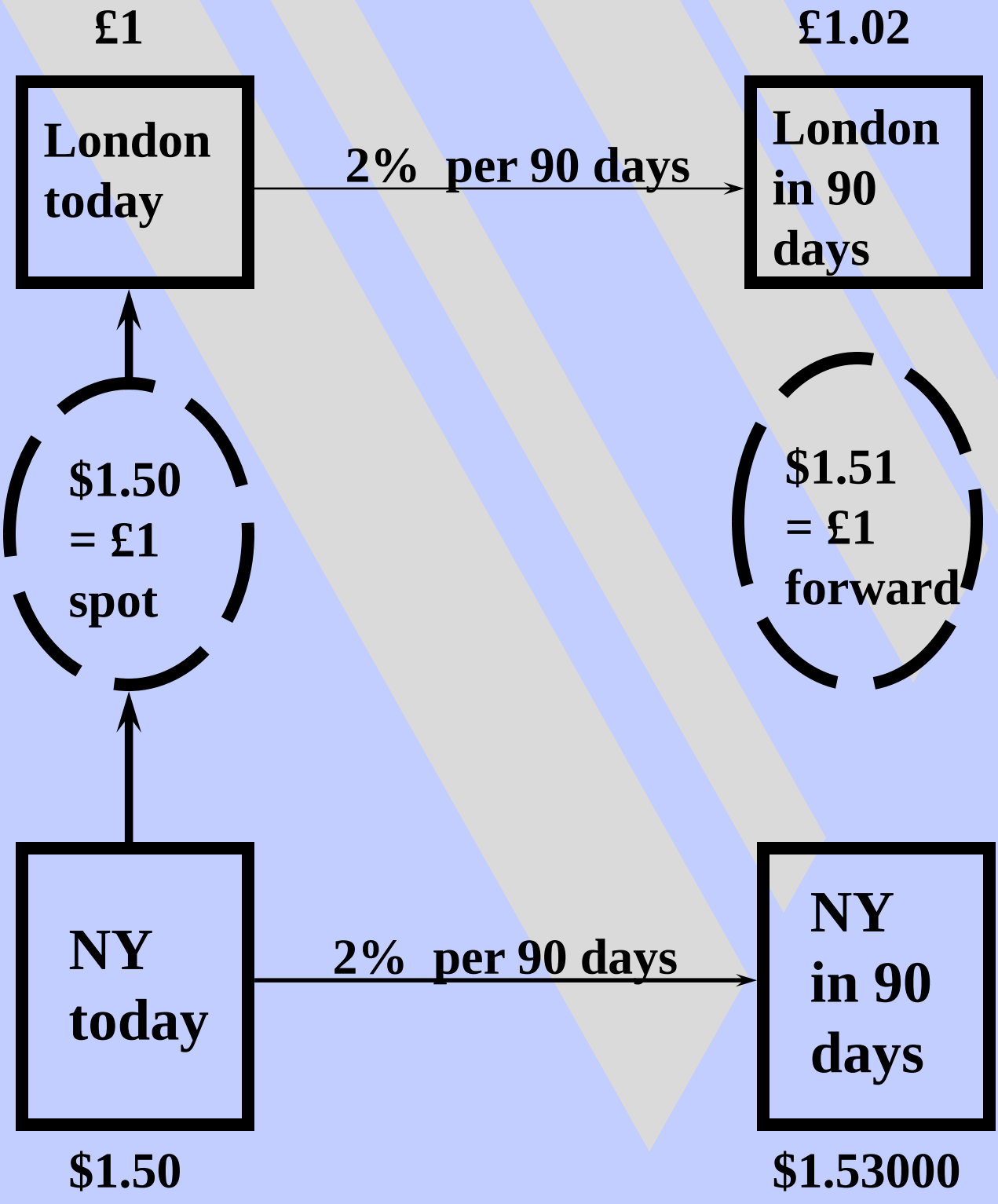

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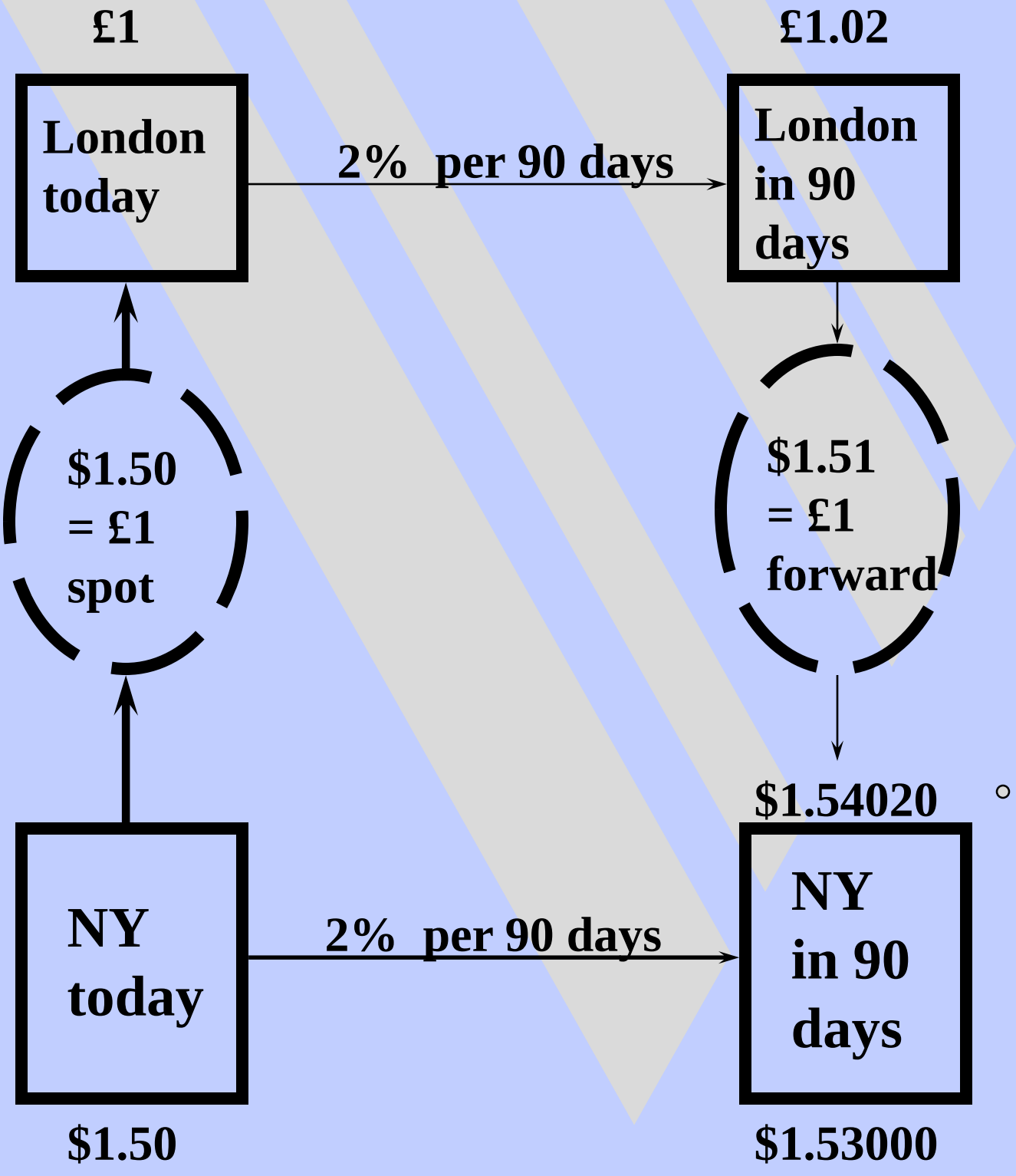

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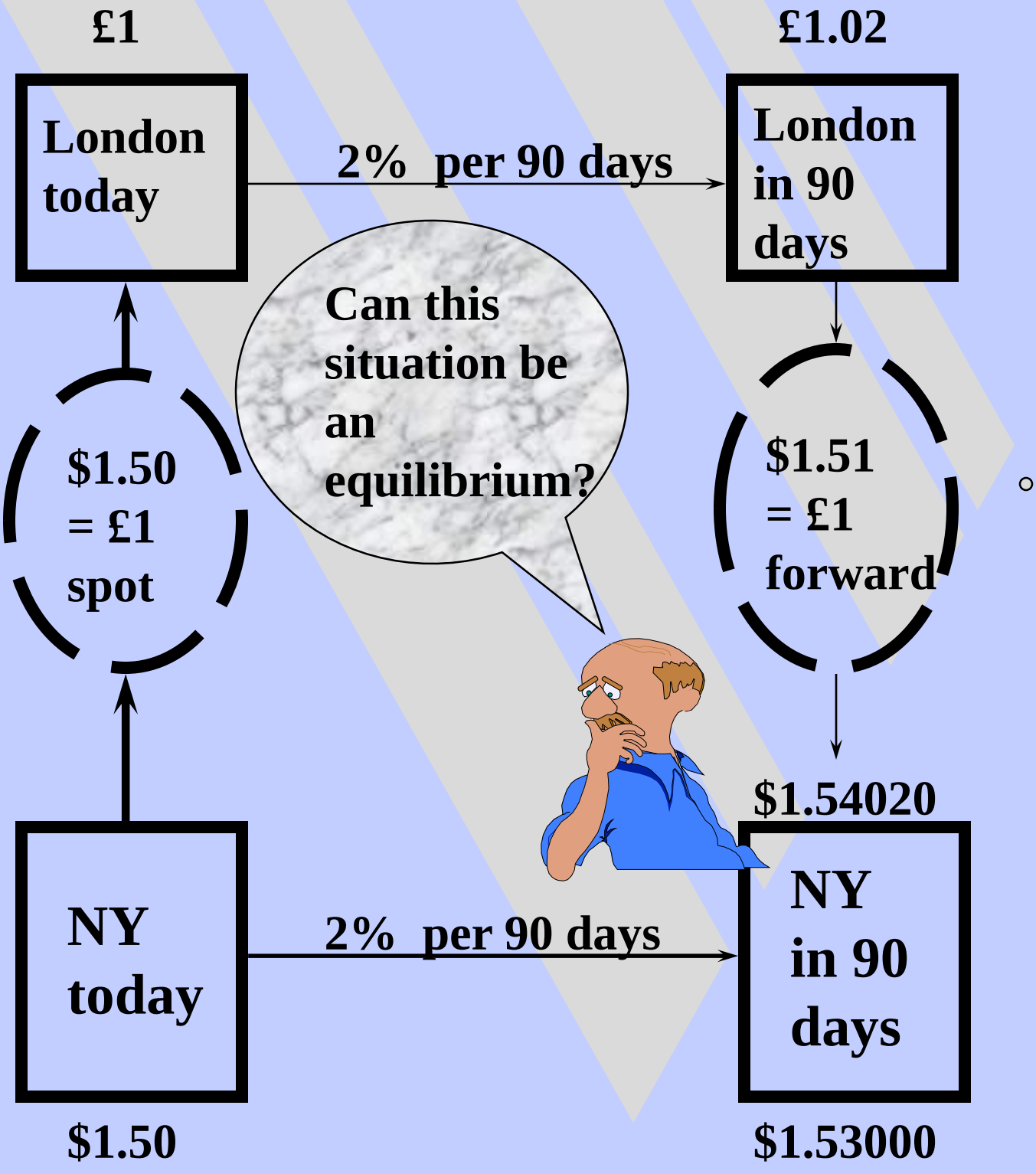


Incentive: *Buy £s spot and sell £s forward*

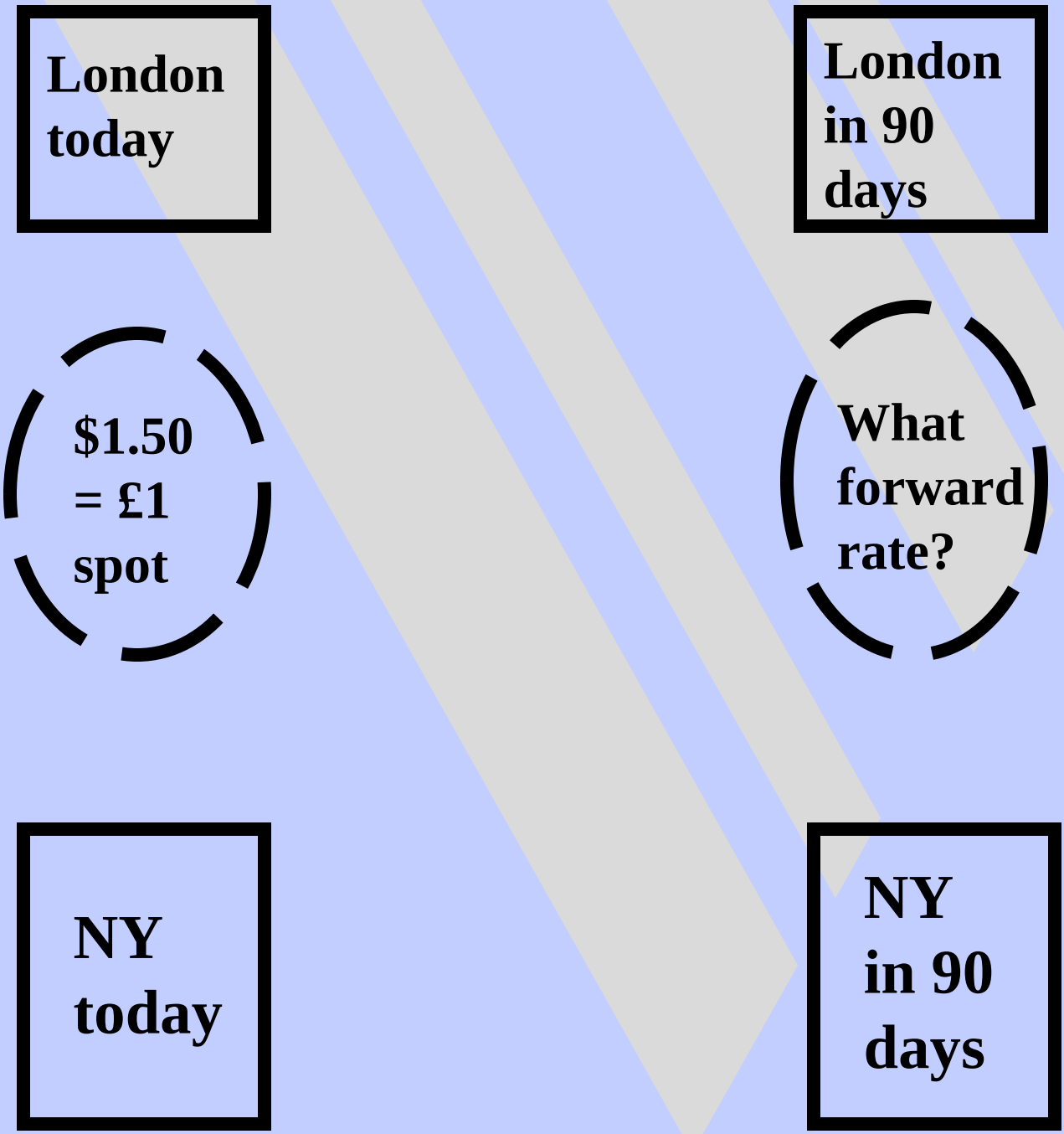
One possible outcome:

$1.505 = £1 spot

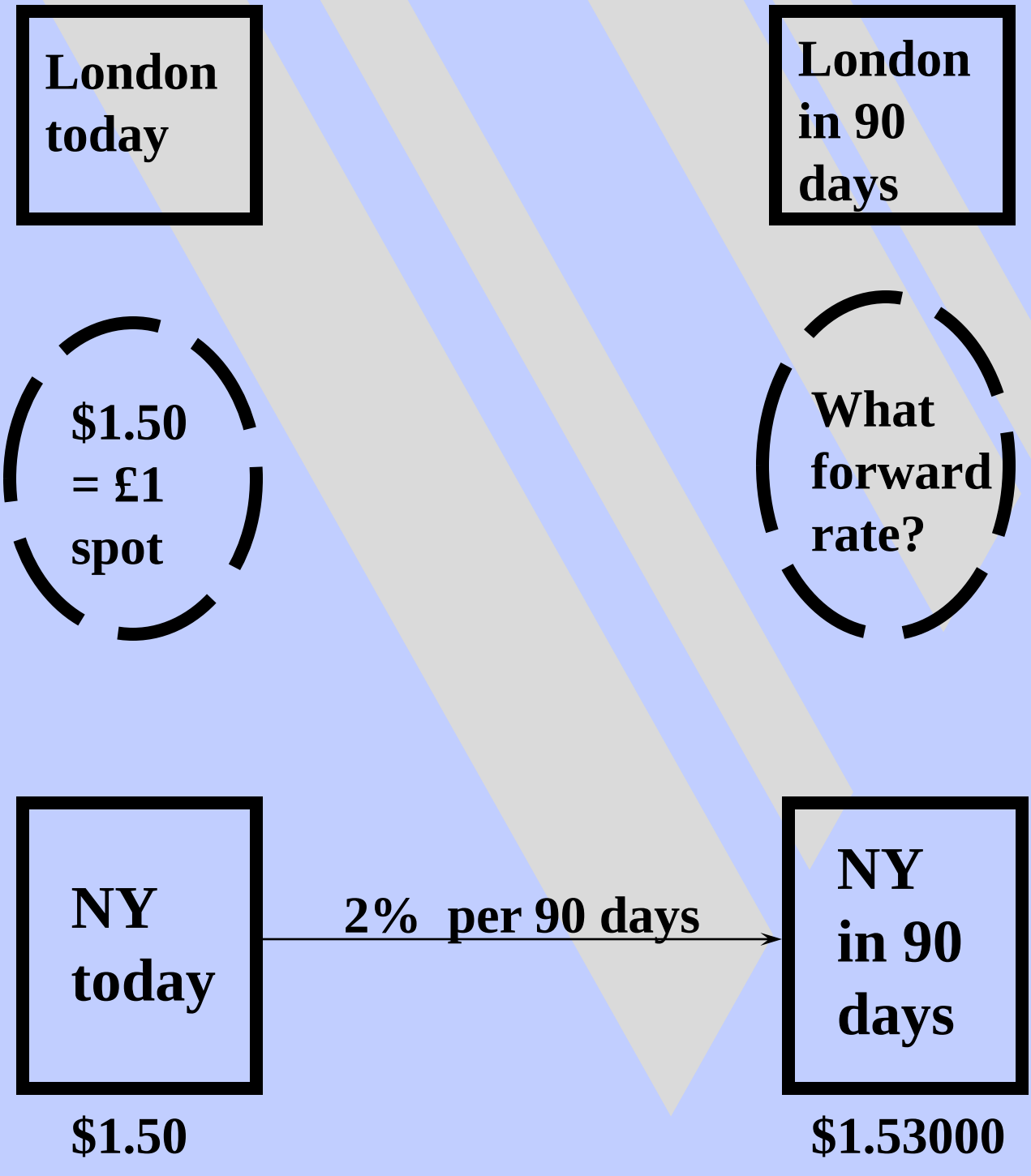
$1.505 = £1 forward

Lesson: If interest rates are the same in London and NY, the spot and forward rates will be equal.

Case 2: Interest rates are 2%/90 days in New York and 3%/90 days in London and you have $1.50 in NY to invest risklessly



Case 2: Interest rates are 2%/90 days in New York and 3%/90 days in London



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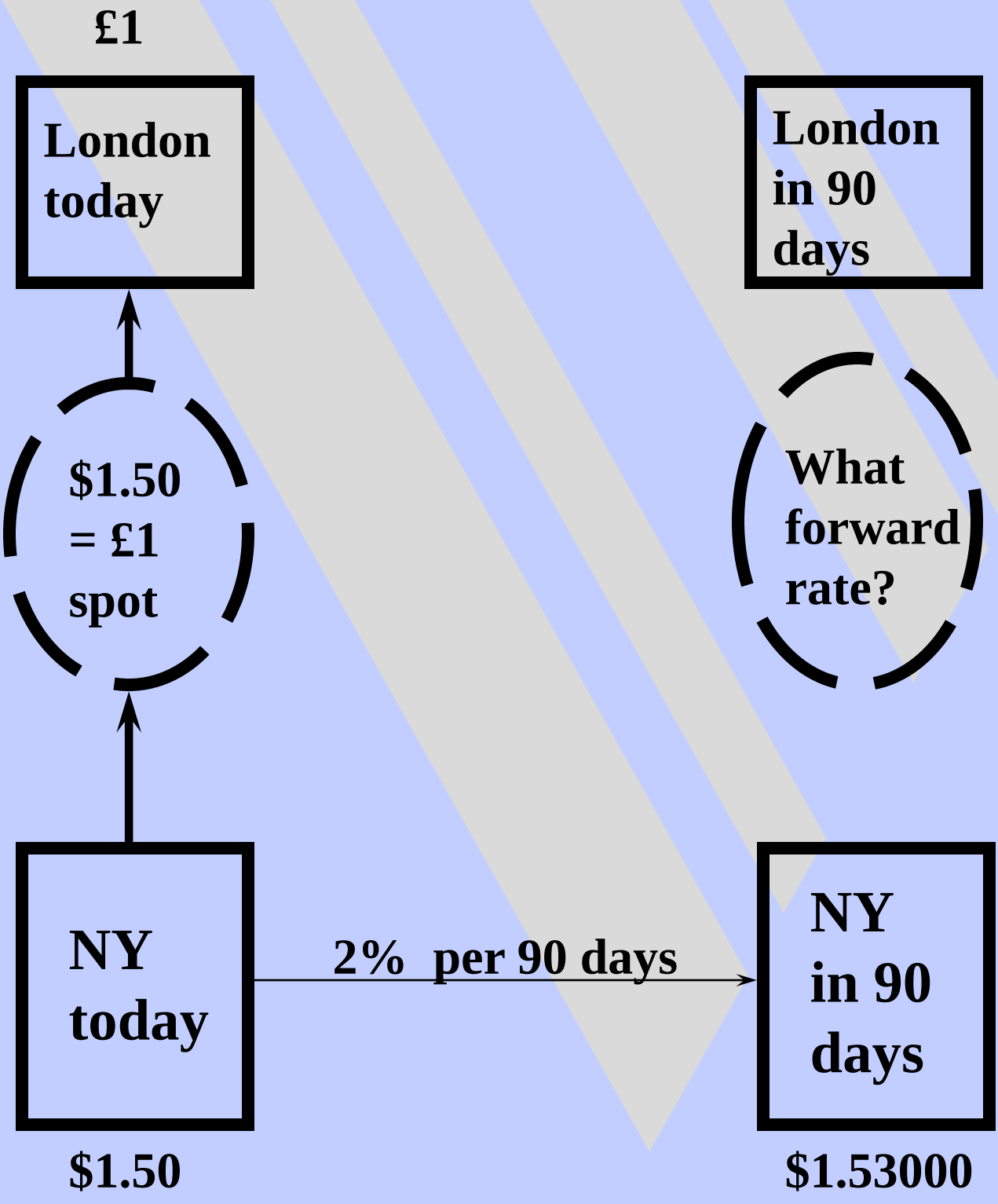

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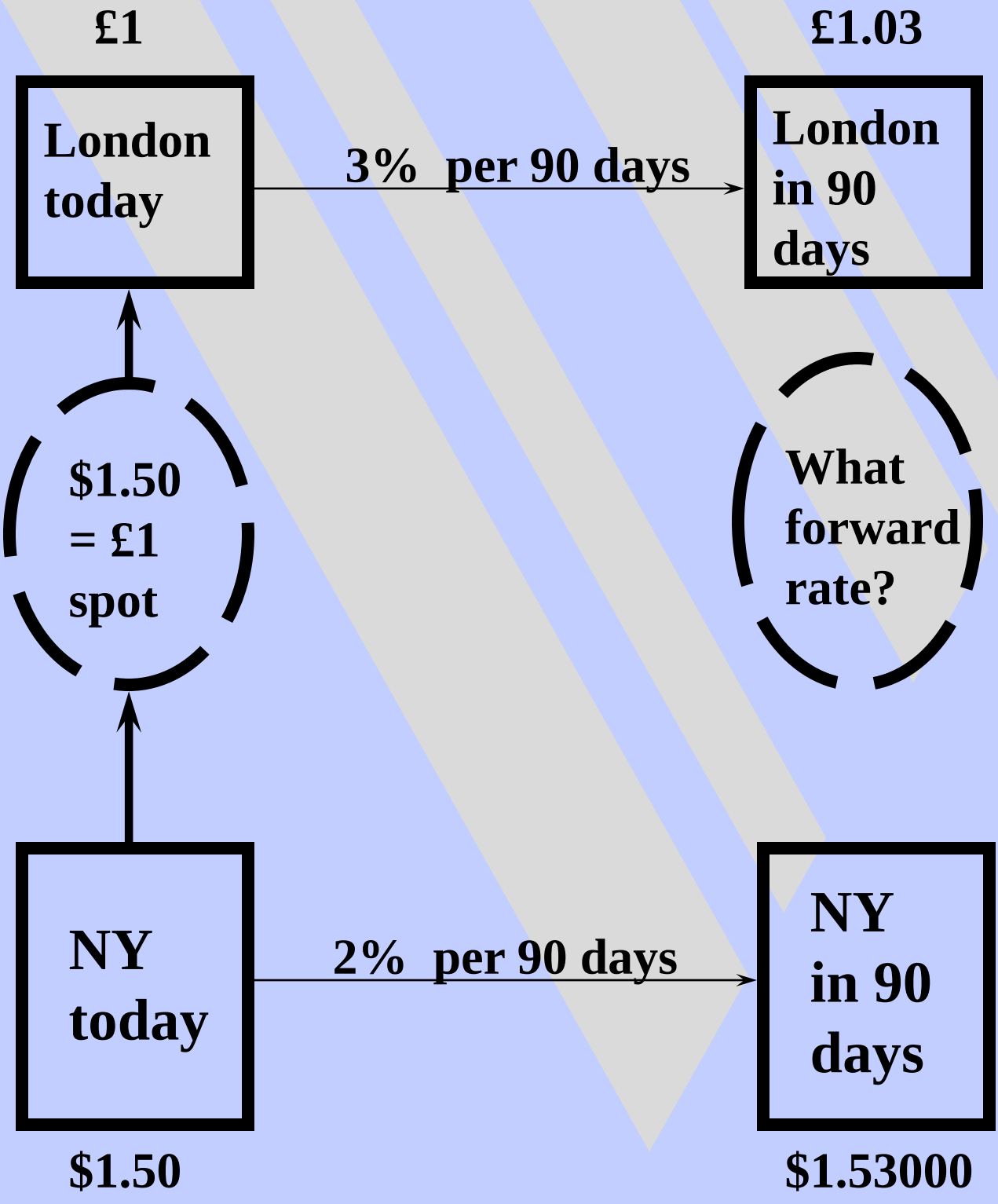

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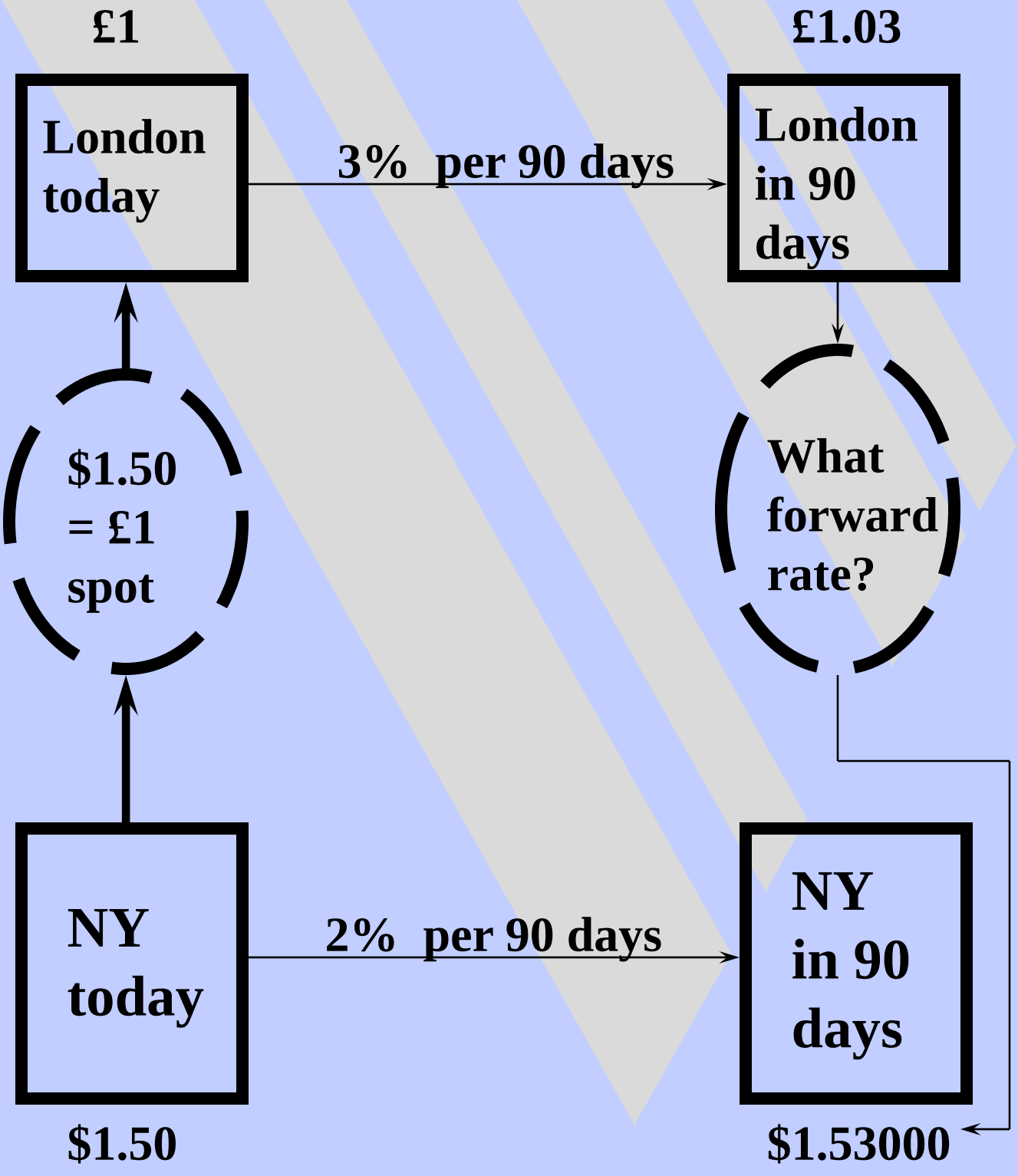

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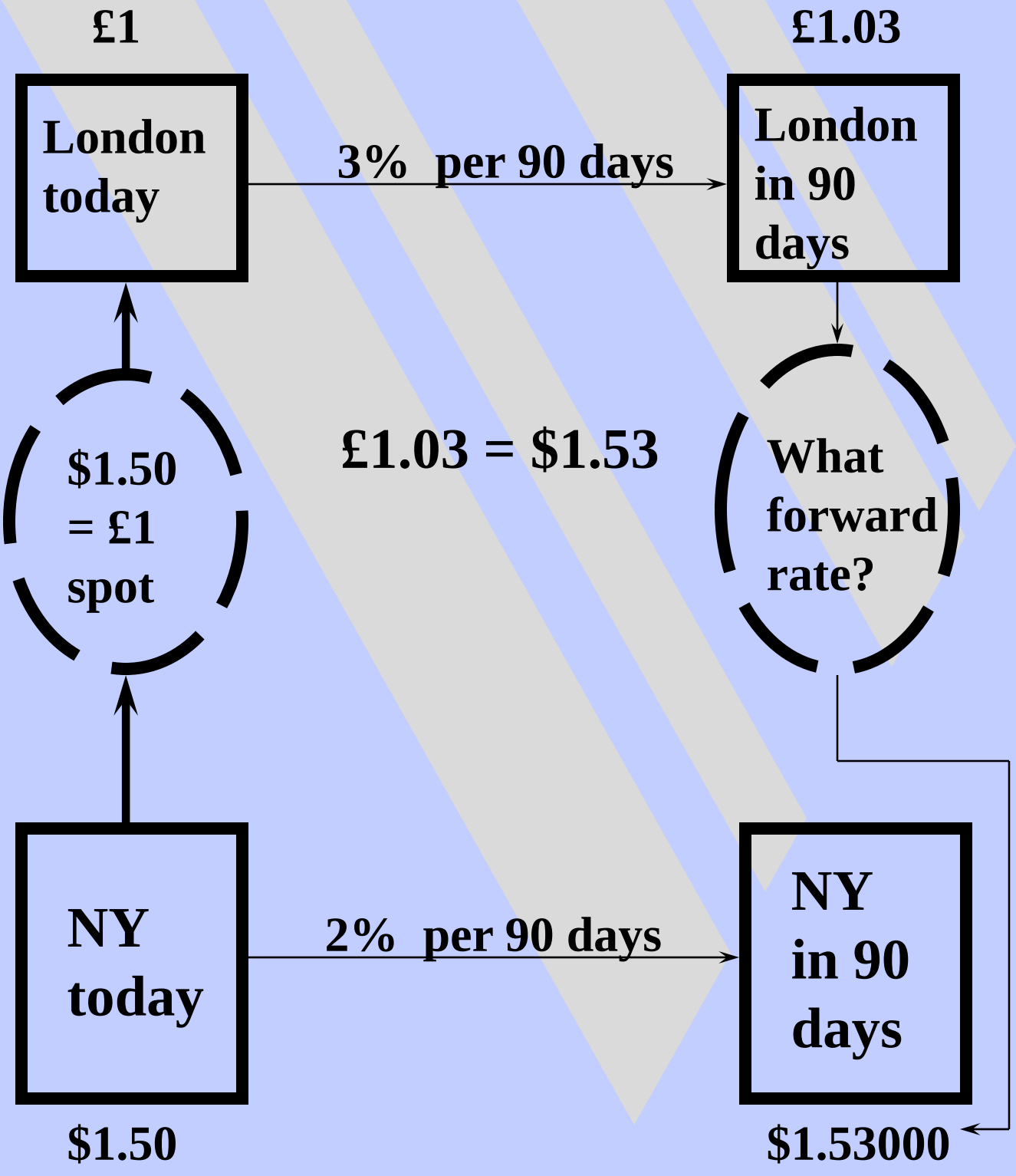

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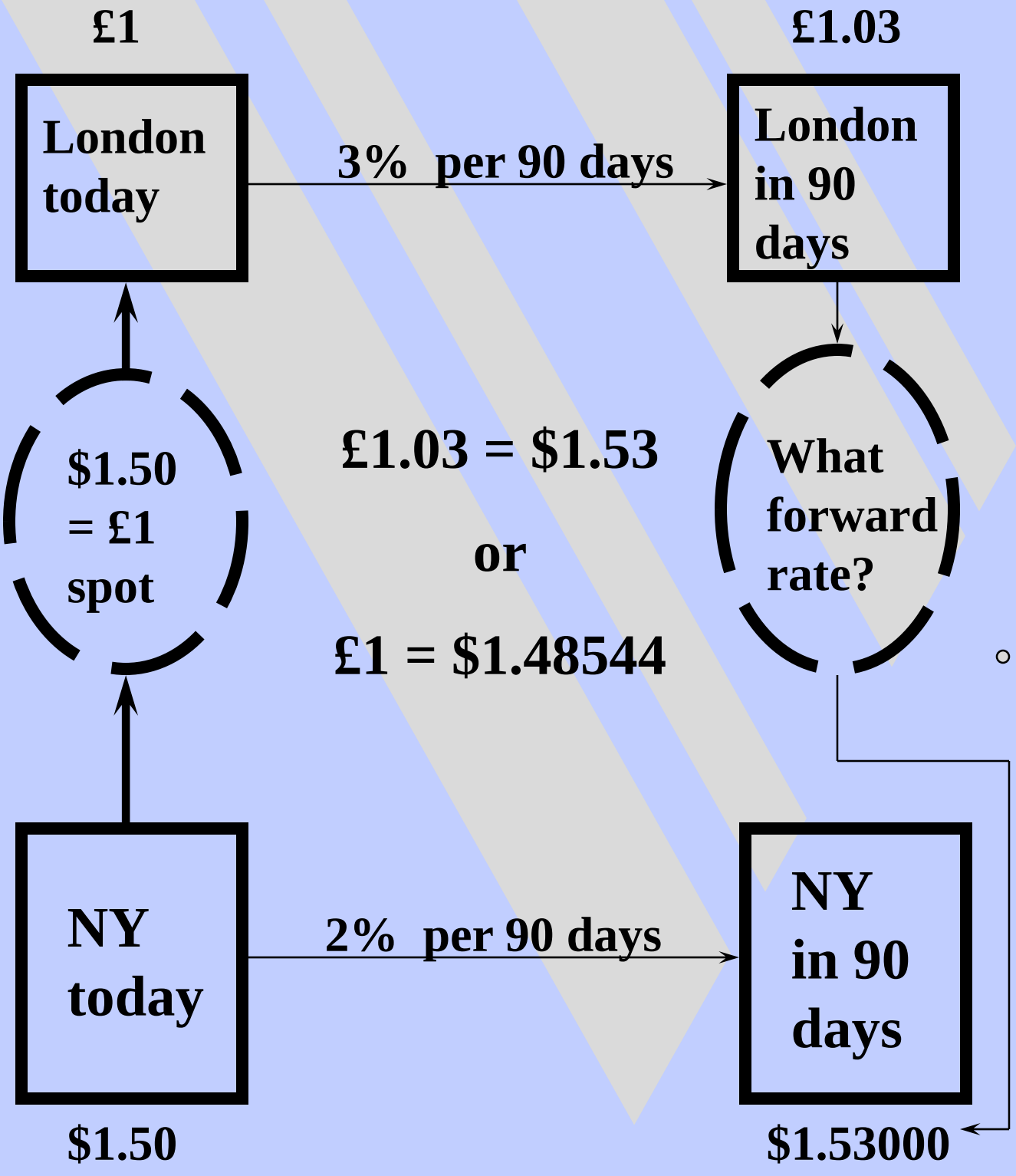

Case 2: Interest rates are 2%/90 days in New York and 3%/90 days in London

If interest rates are higher in London than NY, the £ will sell at a forward discount relative to the spot rate.

£1.03 = $1.53

or

£1 = $1.48544

$$\frac{1 + r_{UK}}{1 + r_{US}} = \left[\frac{S}{F}\right]^4$$

S = spot rate ($/£)

F = forward rate ($/£)

r_{US} = 90-day annualized interest rate in NY

r_{UK} = 90-day annualized interest rate in London

Effect of brokerage fees?

BOTTOM LINERS By Eric and Bill Teitelbaum

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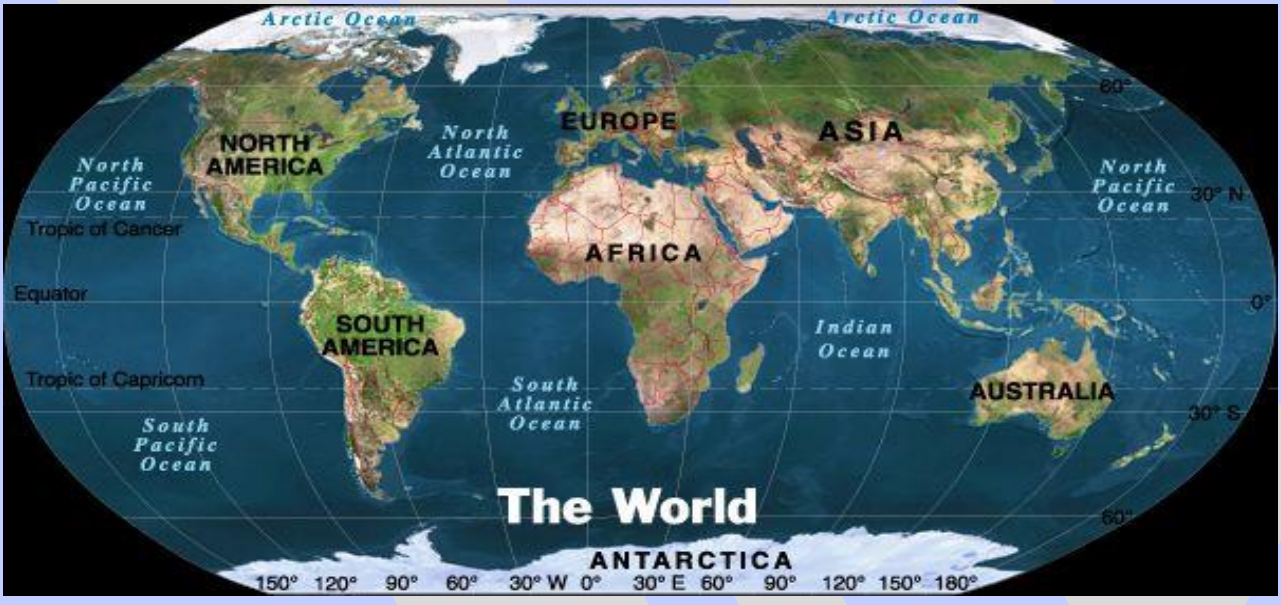
"In passing sentence, try to remember my client is guilty of mismanagement of funds by only one decimal point."

LA Times 5/12/94 D2

Spot/Forward: Lessons

- **Definitions:**
  - **Spot vs. forward**
  - **Long vs. short**
  - **Arbitrage vs. speculation**
  - **Hedging**
- **Forward rates reflect expectations about exchange rates in the future**
- **Forward rates are connected to spot rates through interest differentials**
- **If interest rates in the UK > US, the £ will sell at a forward discount relative to the $**
- **Transactions costs permit deviations from the predicted spot/forward relation**

MGT. 205A



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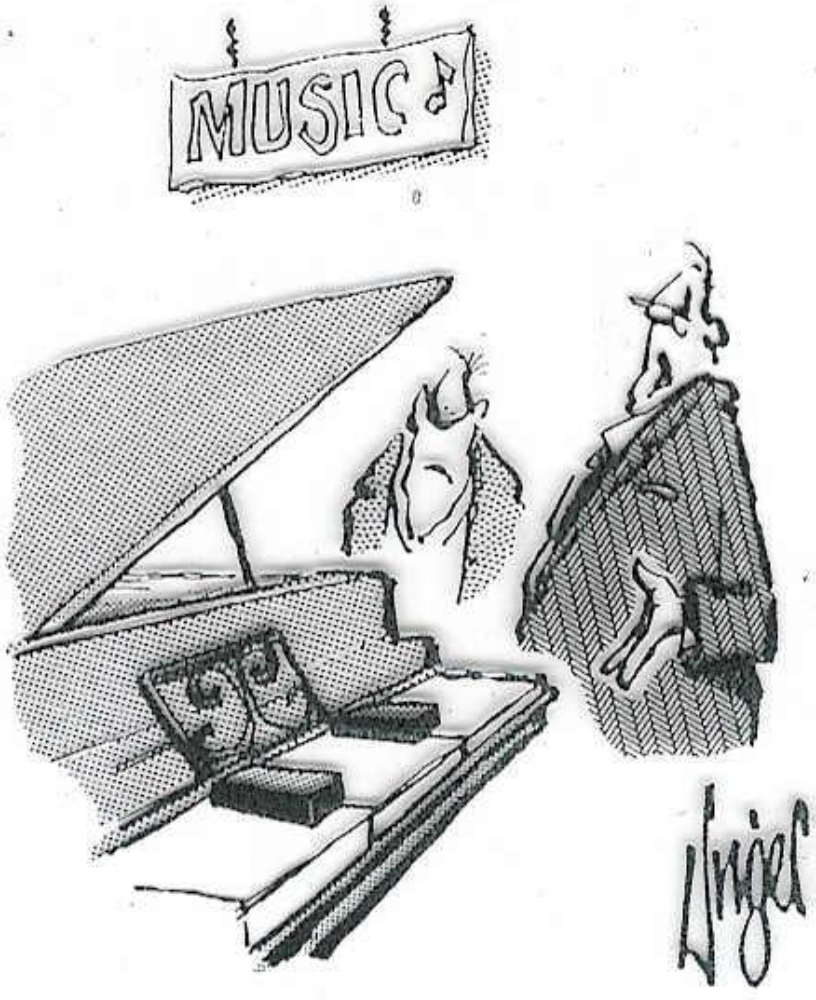

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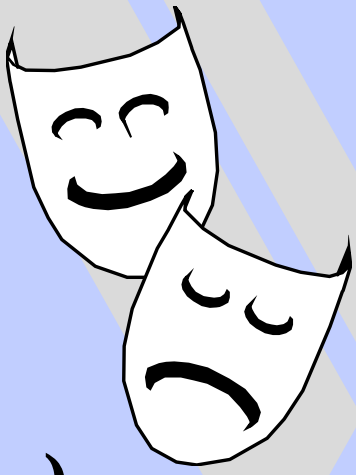
5/28

"This is our beginner's model."

LA Times 5/28/92 E9

"Fix-Price" Inventory Adjustment Model

Cast of Characters



S = Saving

I = Investment

- **Plant and equipment**
- **Inventory (can be + or -)**

C = Consumption

M = Imports

X = Exports

Y = Income ≡ Product

National Income Accounting Identities
(no govt.)

- **Product Y ≡ C+I+X-M**
- **Income Y ≡ C+S**
- **Therefore:**

  C+S ≡ C+I+X-M
- **Or:**

  S - I ≡ X - M

- **Note that these identities are *not* behavioral functions**

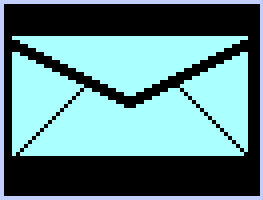
Ex ante vs. *Ex poste*

- **Ex ante:**

  What the actors in the system *want* at the beginning of the period (from behavioral functions)

- **Ex poste:**

  What they will *get by definition* at the end of the period (from accounting identities)



Disequilibrium:

☹ **When the actors in the system don't get what they want**

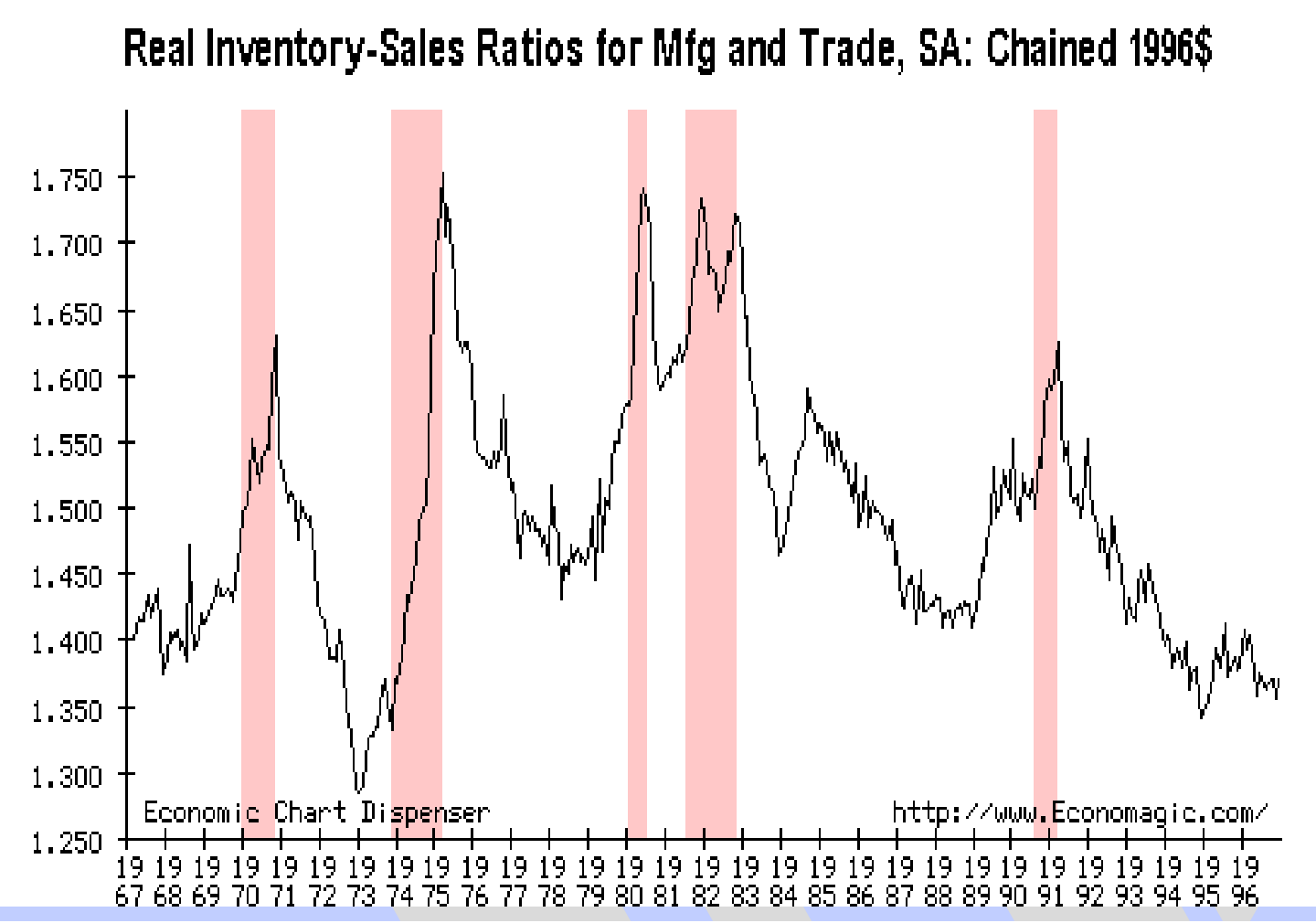
(and will therefore take action to get it)

Equilibrium:

☺ **When the actors in the system get what they want so ex ante desires = ex poste results**

Disequilibrium

“Gentlemen, we’re sitting on a hell of a lot of inventory.”


Real Inventory-Sales Ratios for Mfg and Trade, SA: Chained 1996$
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1.700
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1.600
1.550
1.500
1.450
1.400
1.350
1.300
1.250
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http://www.Economagic.com/
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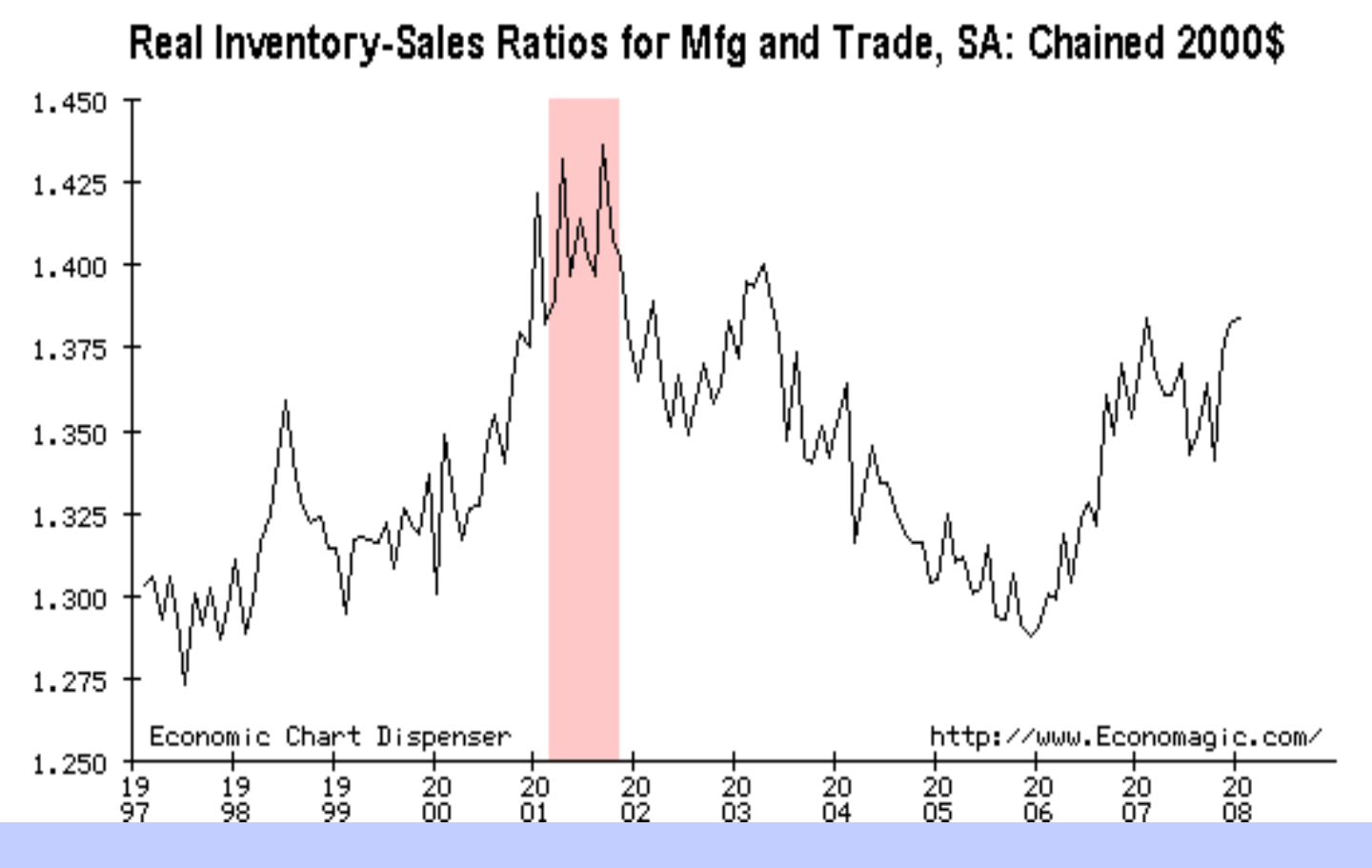
Real Inventory-Sales Ratios for Mfg and Trade, SA: Chained 2000$
1.450
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1.400
1.375
1.350
1.325
1.300
1.275
1.250
Economic Chart Dispenser
http://www.Economagic.com/
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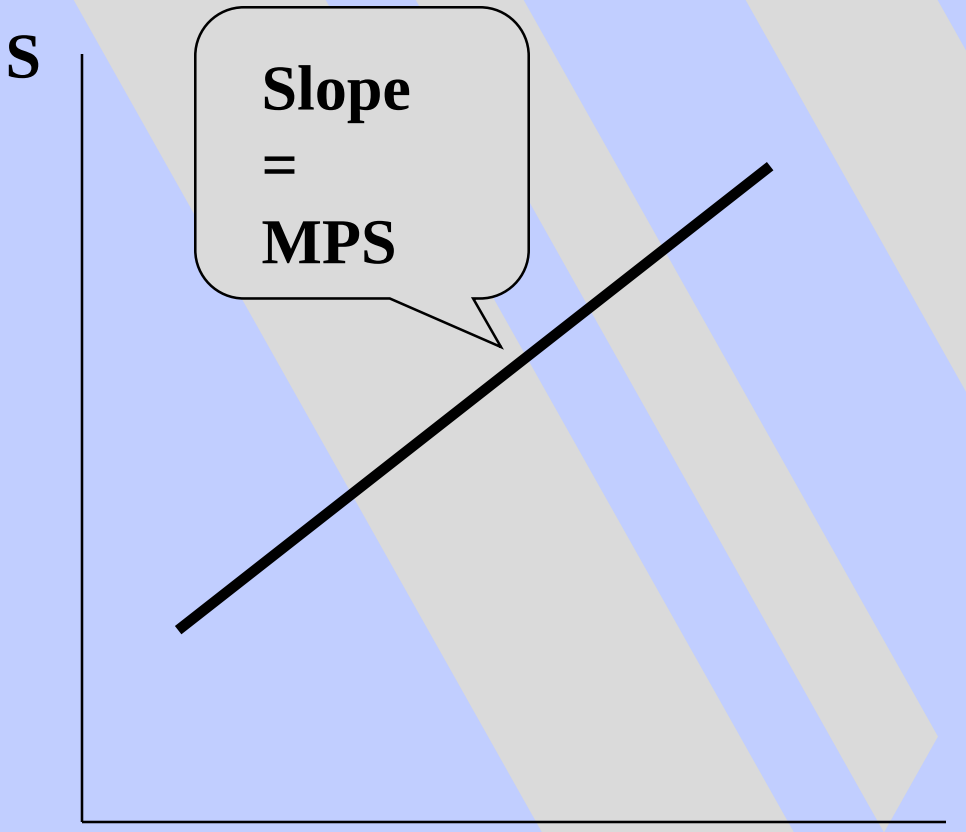
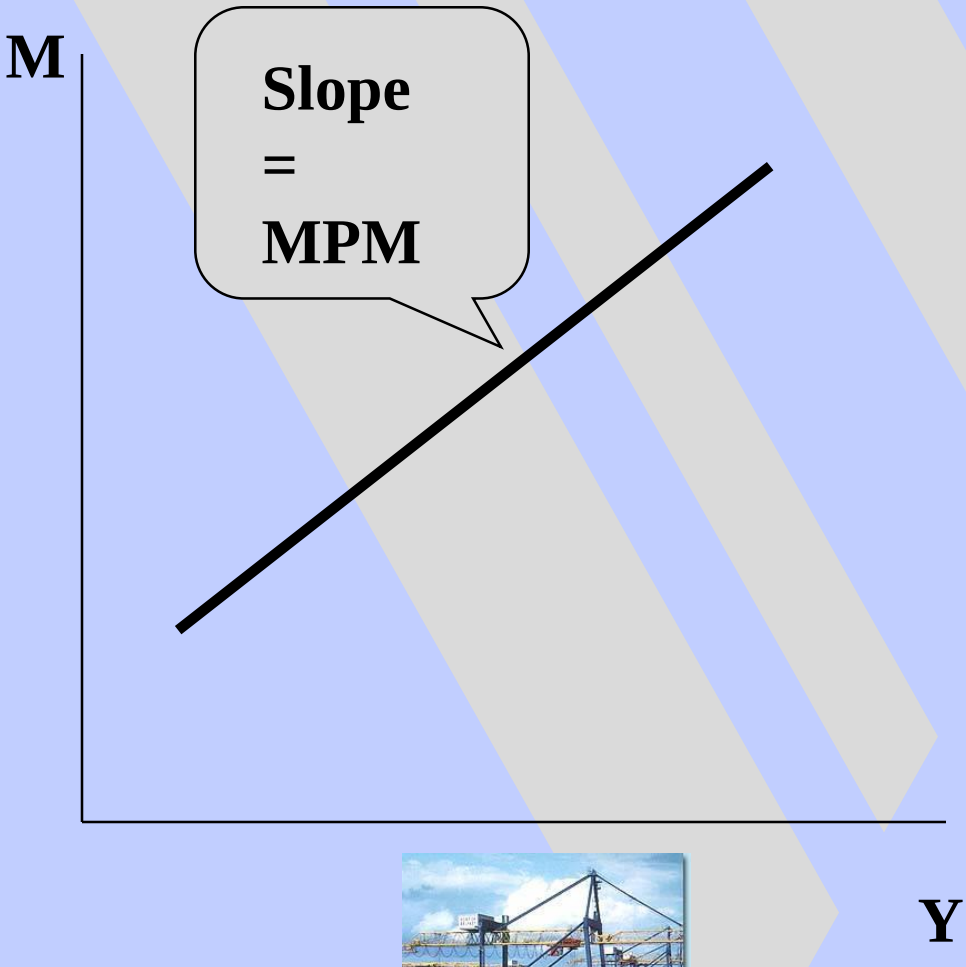
Saving: *Behavioral Assumption*

dS/dY = marginal propensity to save (MPS) > 0

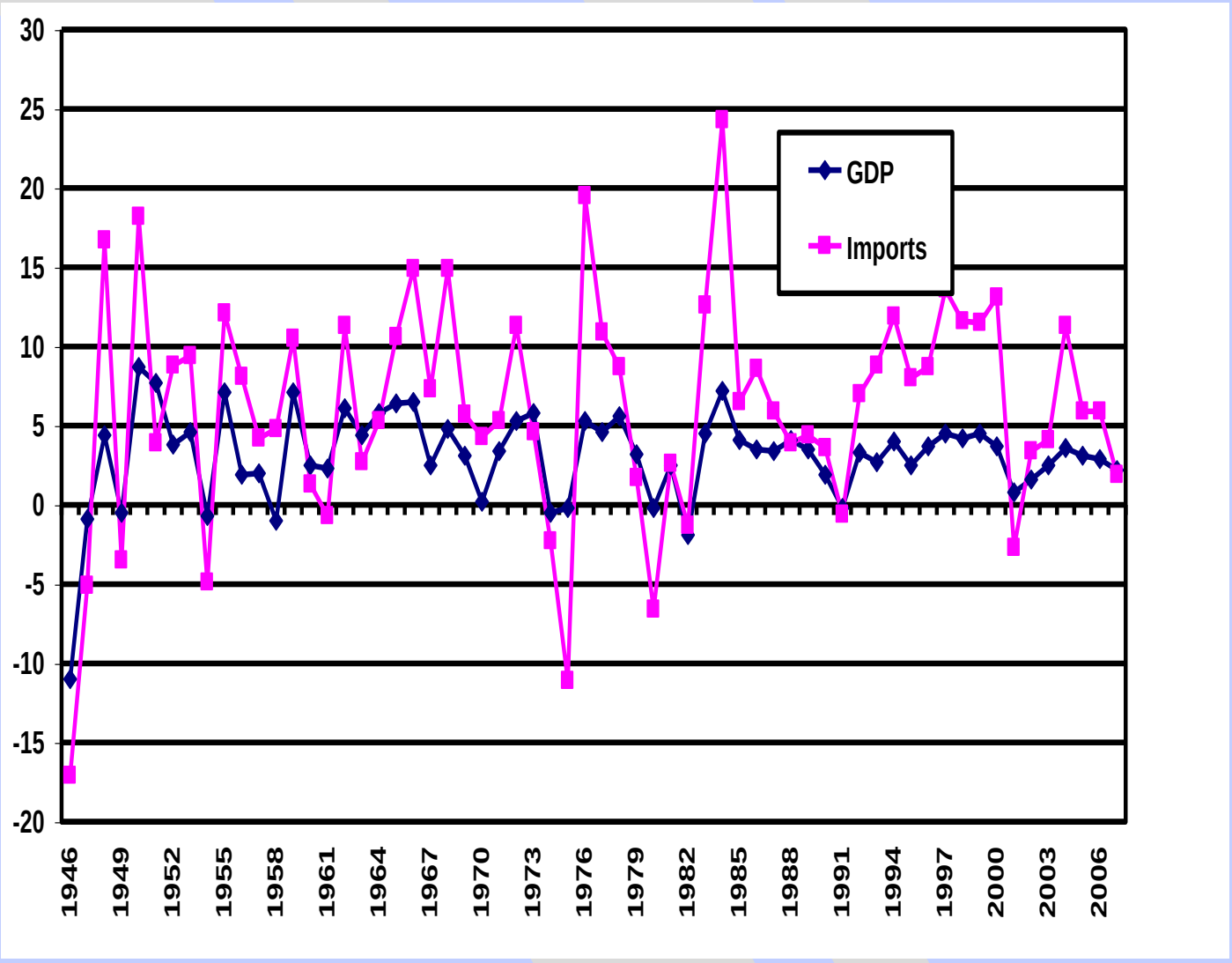


Imports: *Behavioral Assumption*

dM/dY = marginal propensity to import (MPM) > 0



% Change: Real Imports vs. Real GDP 1946-2008



High elasticity of real imports with respect to real GDP ($e=2$, $R^2 = .64$) ◦

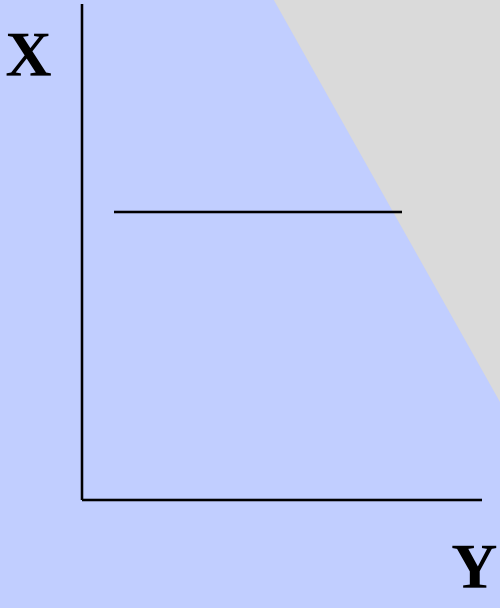
Initial assumptions:

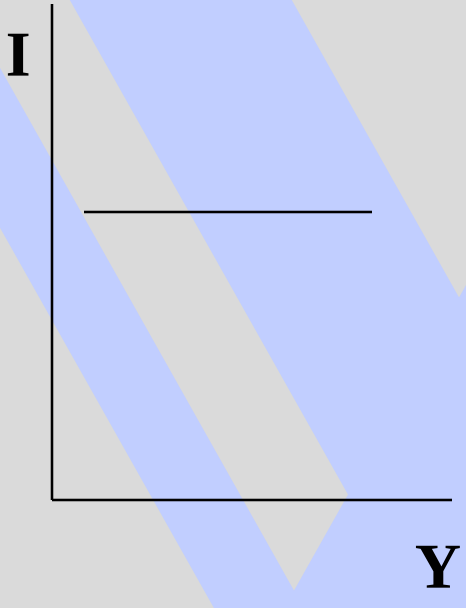
Exogenous Variables

(not functions of Y) *are:*

Exports (X)

Investment (I)



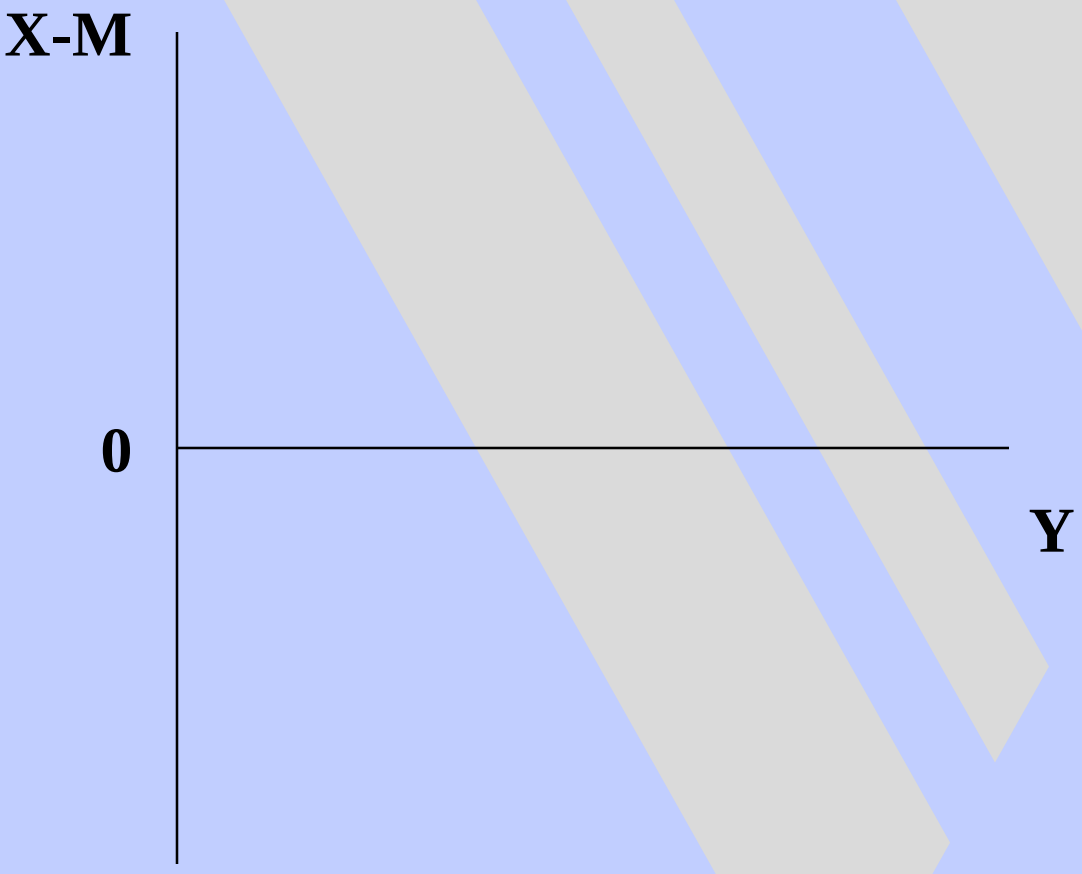


What is slope of X-M?

Assumptions:

dX/dY = 0

dM/dY > 0



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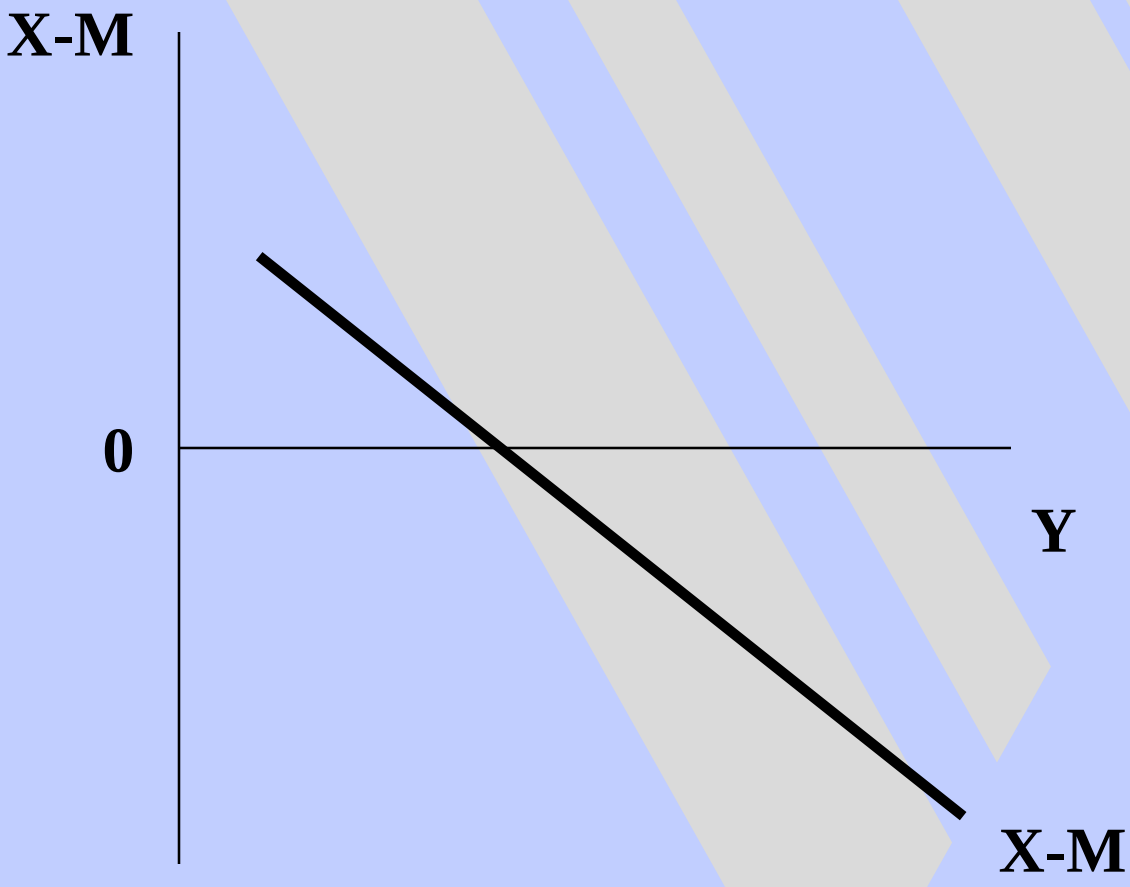
dX/dY = 0

dM/dY > 0

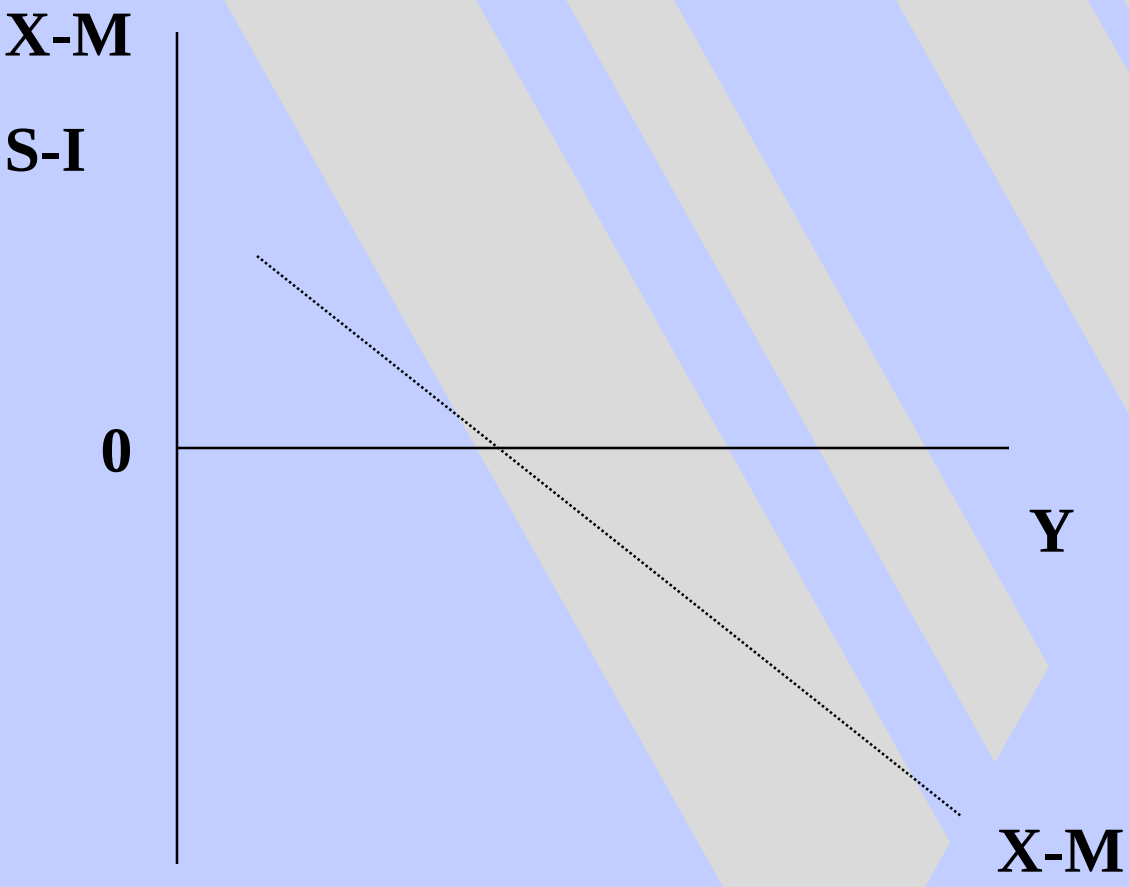


What is slope of S-I?

Assumptions:

dI/dY = 0

dS/dY > 0

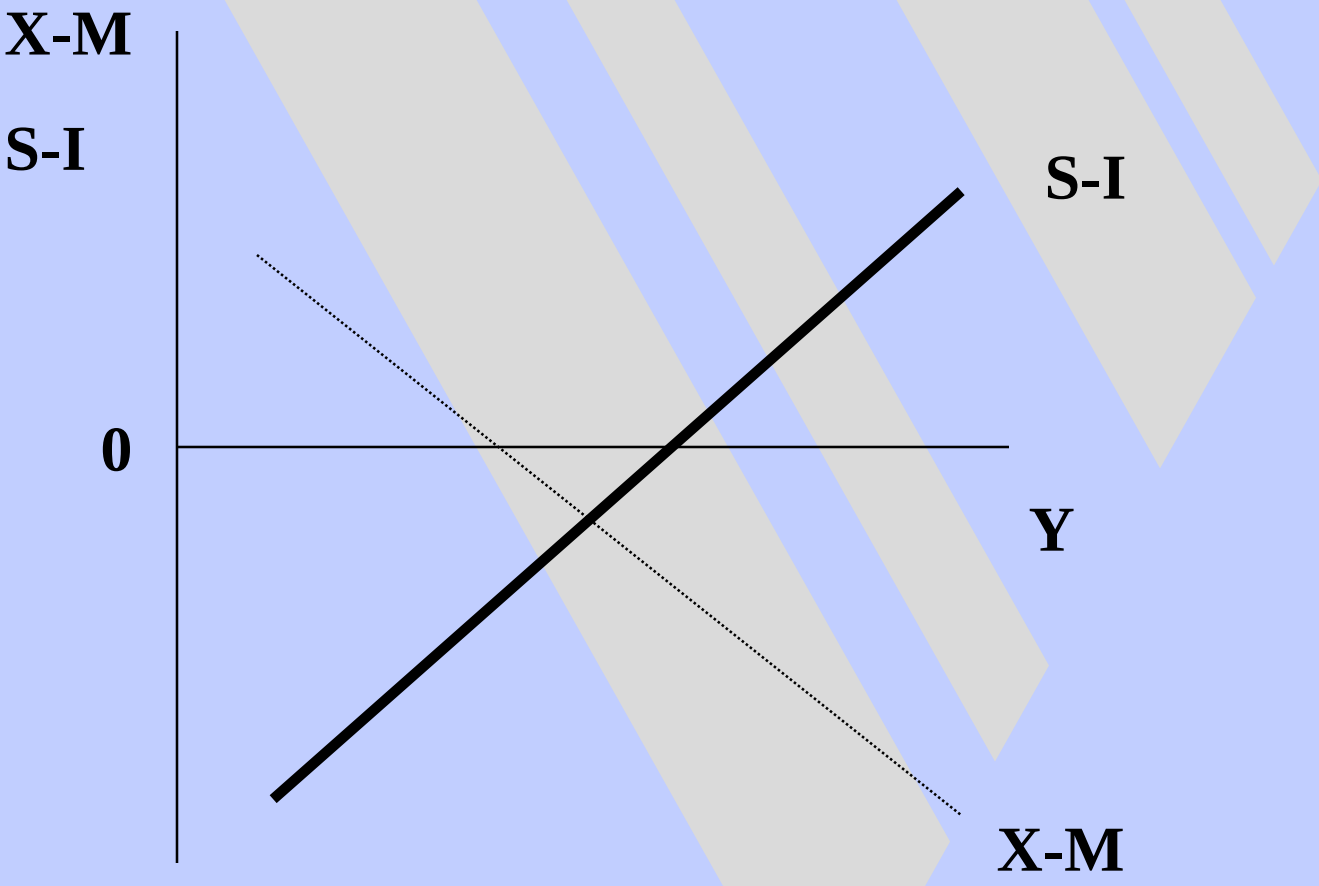


What is slope of S-I?

Assumptions:

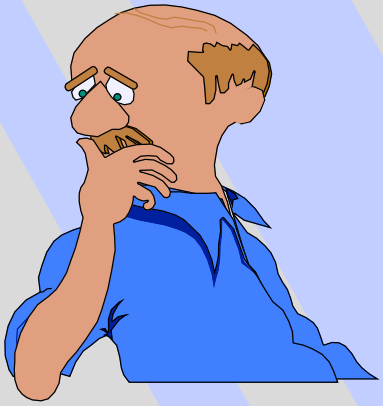
dI/dY = 0

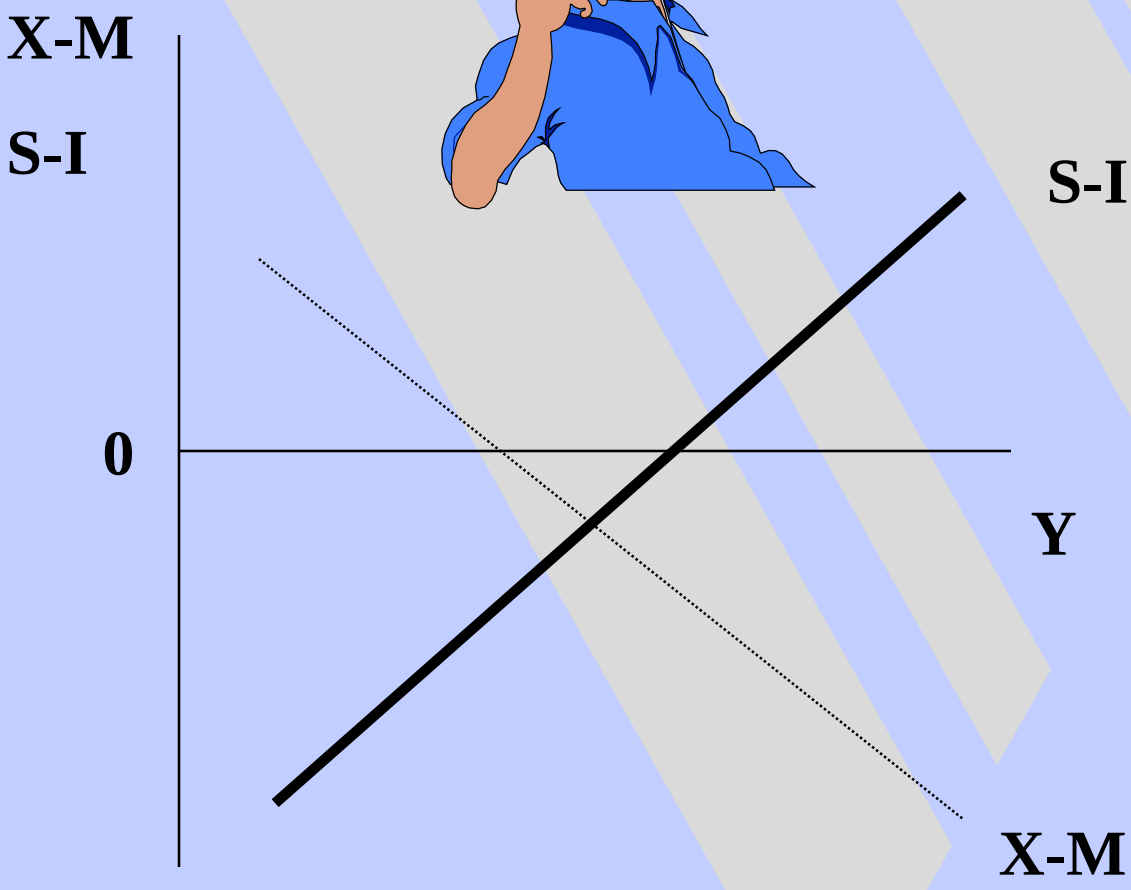
dS/dY > 0



Where do we find equilibrium?

(Ex ante desires = ex poste results)





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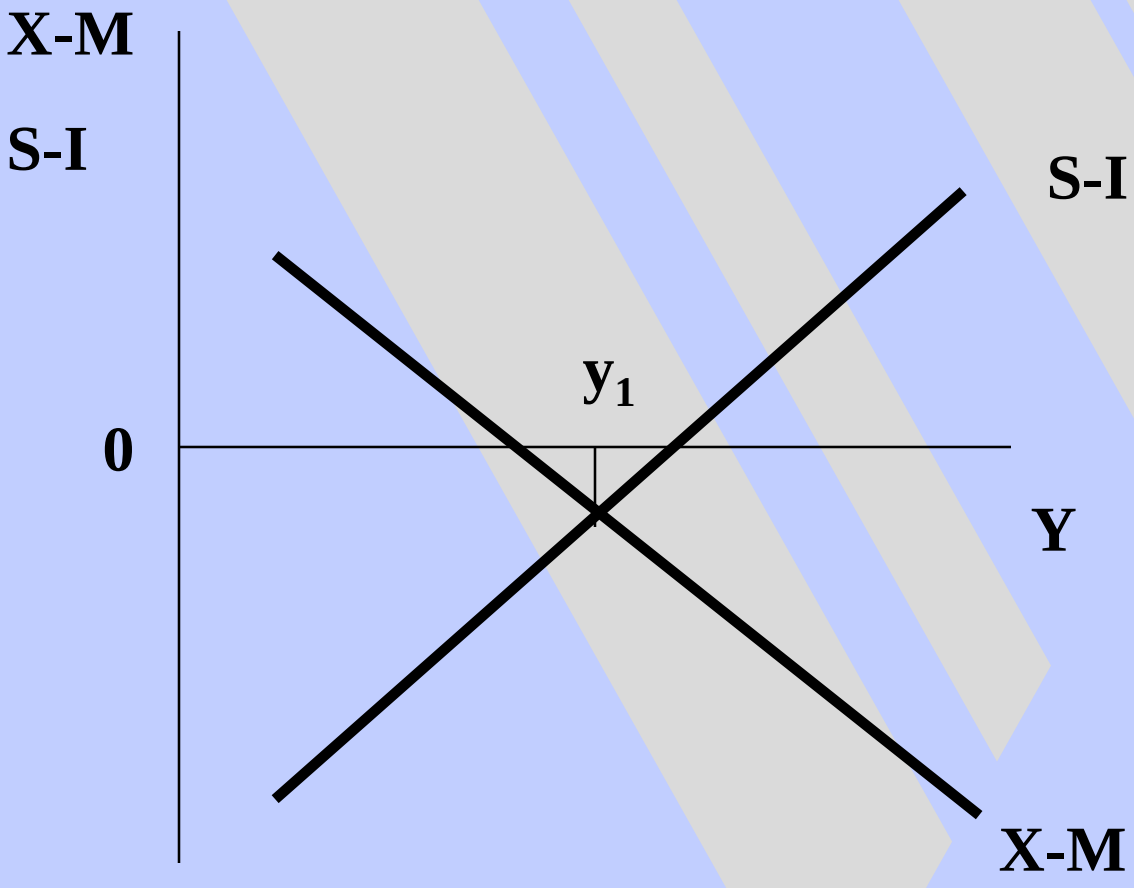

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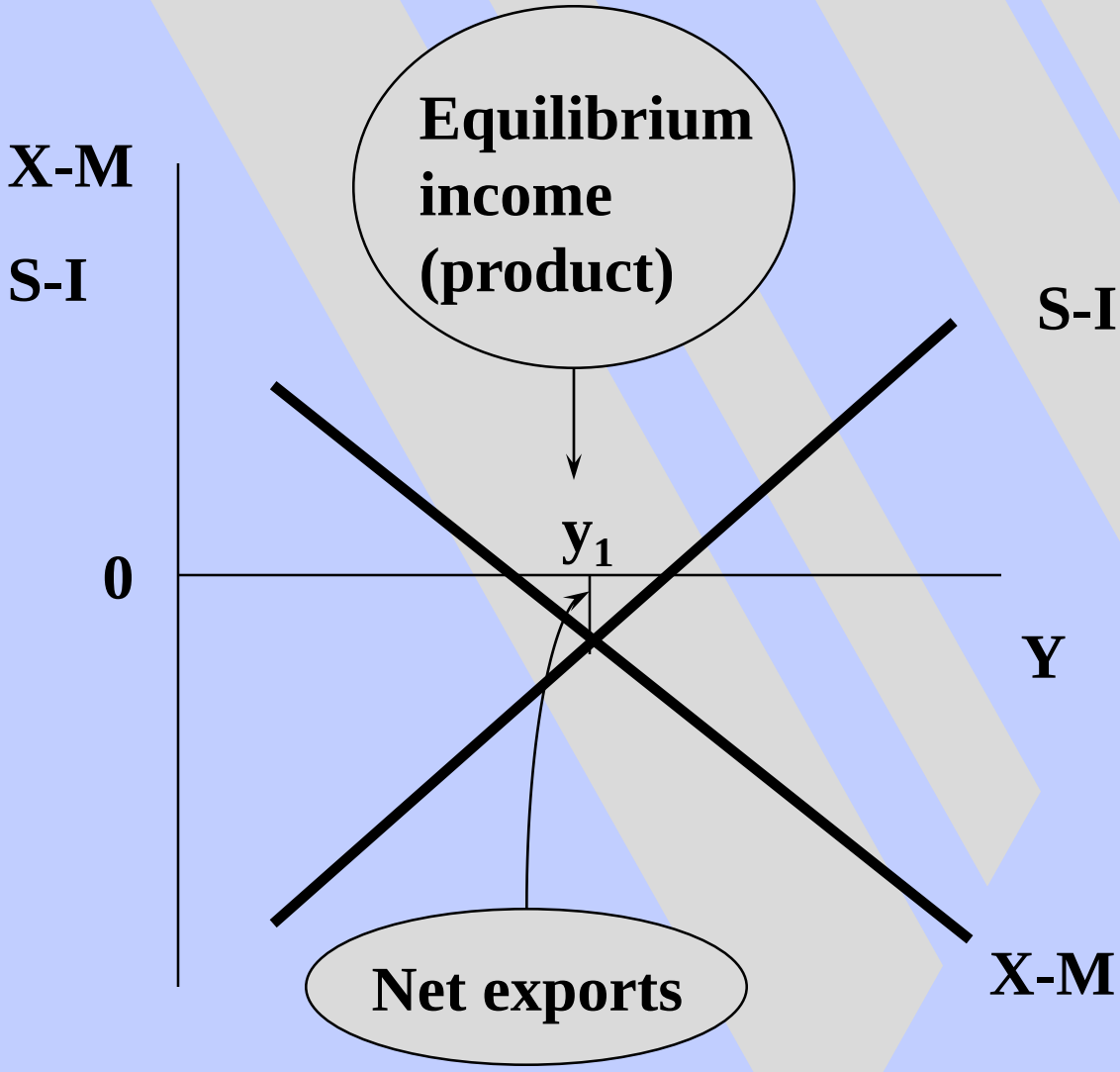
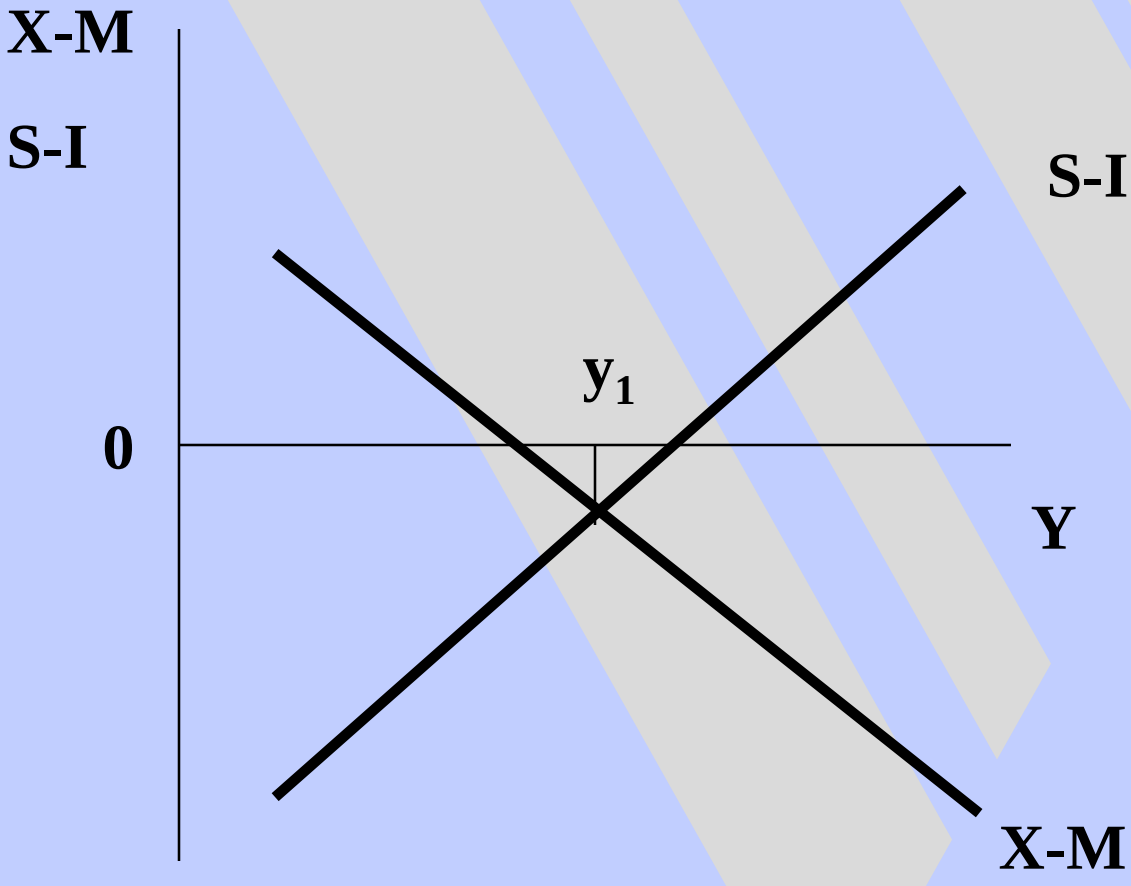


Using the Fix-Price Model to Analyze Cases

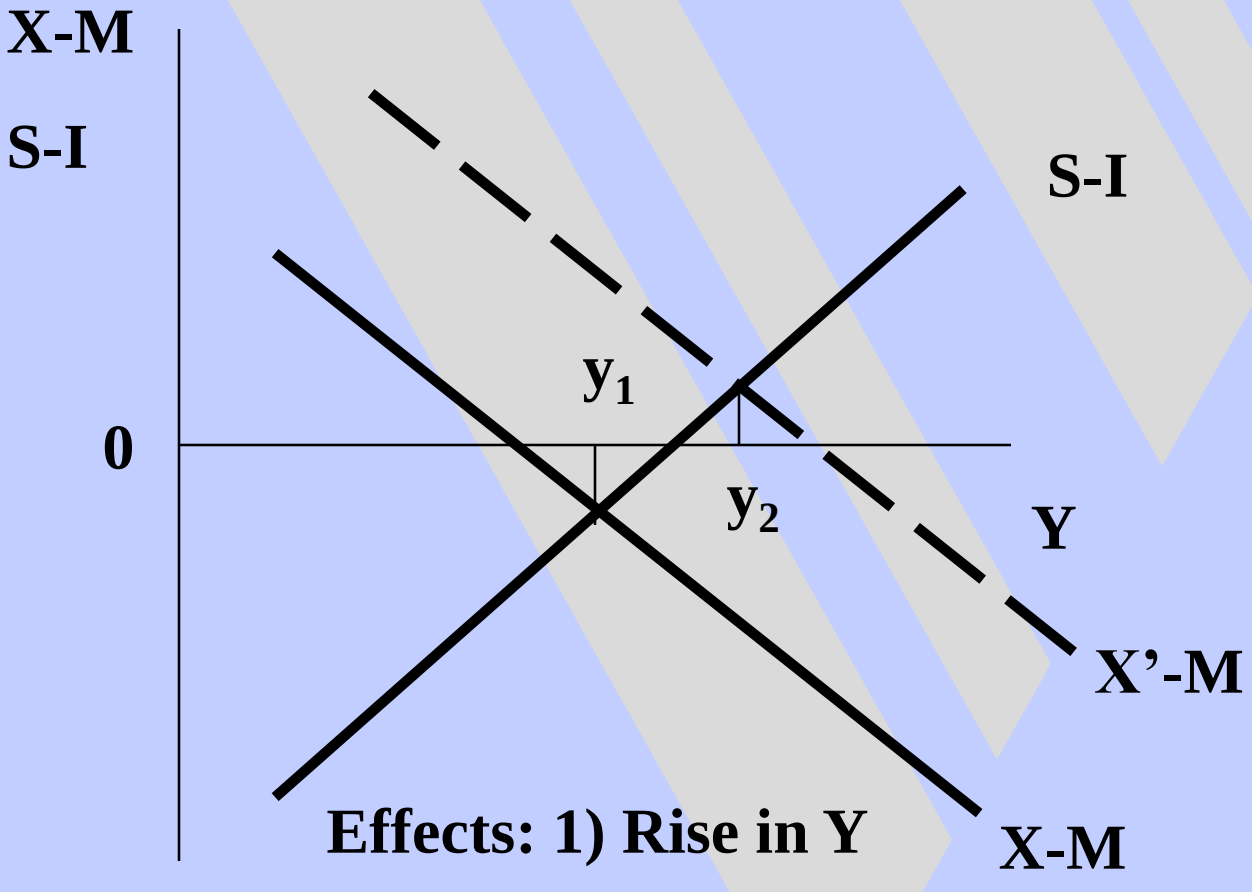
- **Case I:**
  - **Exogenous increase in X demand**
  - **Foreign trade multiplier**
- **Case II:**
  - **Exogenous increase in saving**
- **Case III:**
  - **Tariff increase**
- **Case IV:**
  - **Devaluation**

Case I: *Exogenous Increase in X Demand*

If foreigners suddenly demand more of our exports, what curve will shift? In what direction?



Case I: *Exogenous Increase in X Demand*



Effects: 1) Rise in Y

2) Improvement in net exports by less than initial shock

Derivation of the Foreign Trade Multiplier *given assumptions so far*

X - M = S - I

dX - dM = dS - dI

dX/dY - dM/dY = dS/dY - dI/dY

Note: dI/dY = 0 by assumption

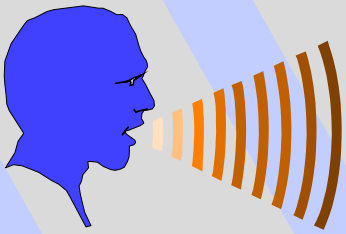
so: dX/dY - dM/dY = dS/dY

Inverting:

dY/dX = foreign trade multiplier

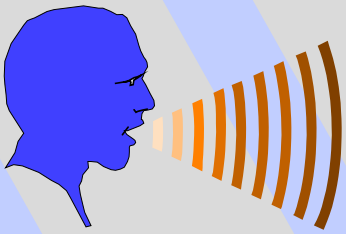
= 1/(dS/dY + dM/dY)

= 1/(MPS + MPM)

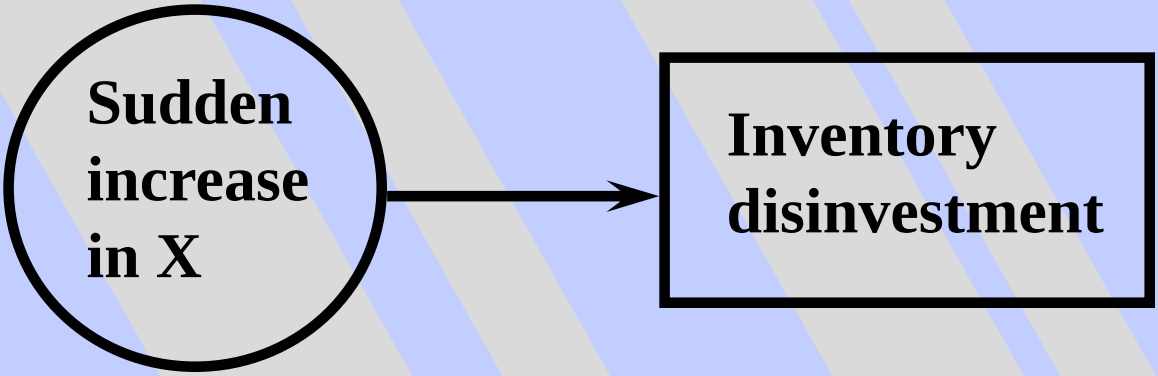


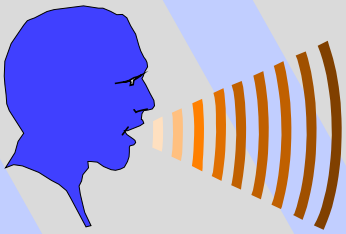
Telling the Story

Sudden increase in X



Telling the Story



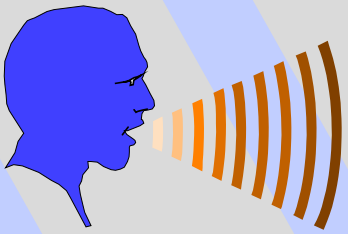


Telling the Story

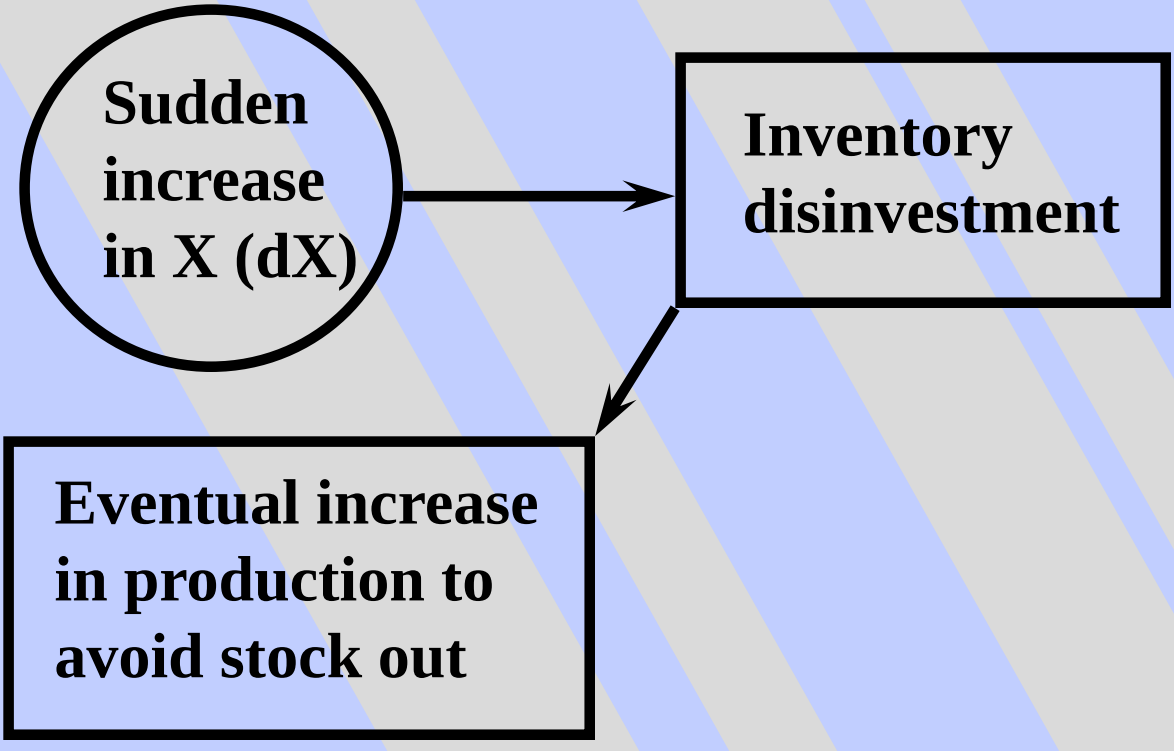
Sudden increase in X (dX)

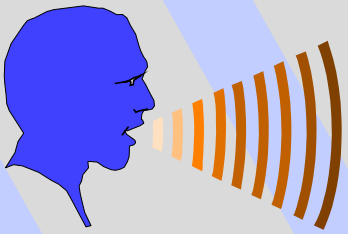
Inventory disinvestment

$$X+dX-M \equiv S-(I-dX)$$

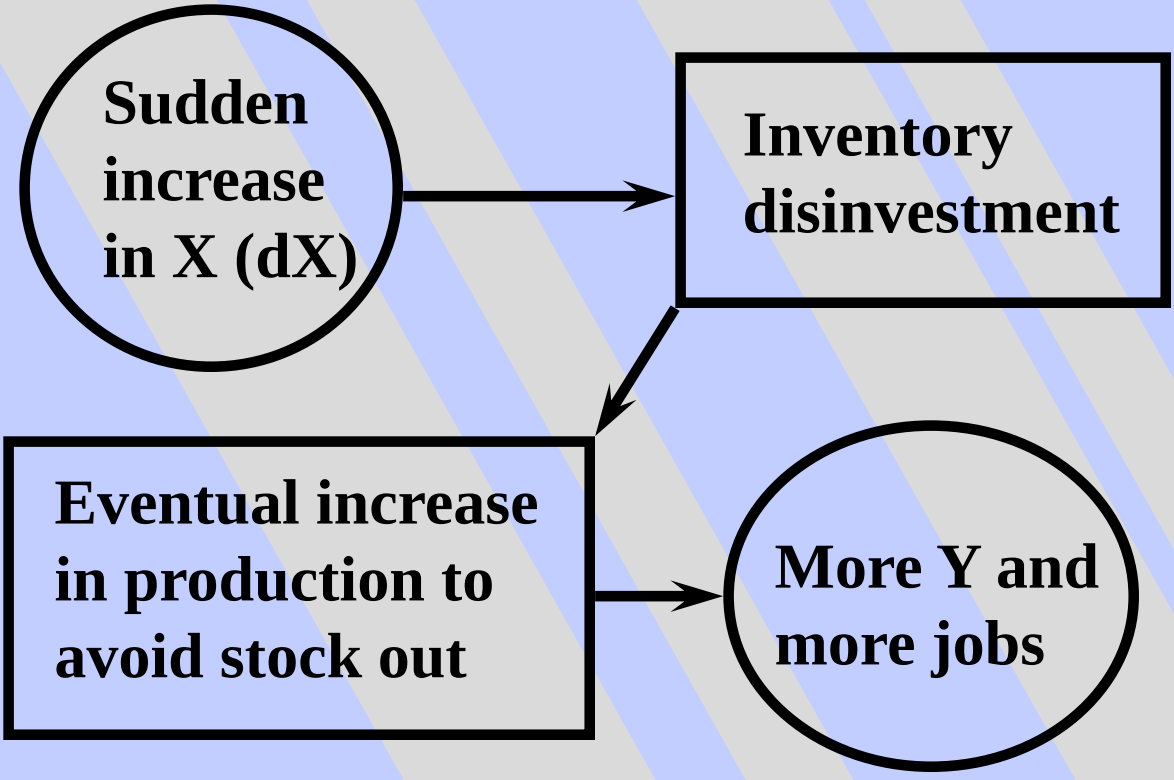


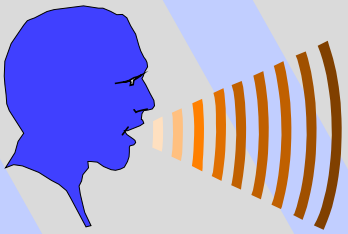
Telling the Story





Telling the Story


Sudden increase in X (dX)
Inventory disinvestment
Eventual increase in production to avoid stock out
More Y and more jobs



Telling the Story

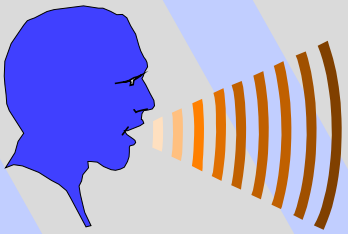
Sudden increase in X (dX)

Inventory disinvestment

Eventual increase in production to avoid stock out

More Y and more jobs

Which brings in more imports, lessening effect on X-M



Telling the Story

Sudden increase in X (dX)

Inventory disinvestment

Eventual increase in production to avoid stock out

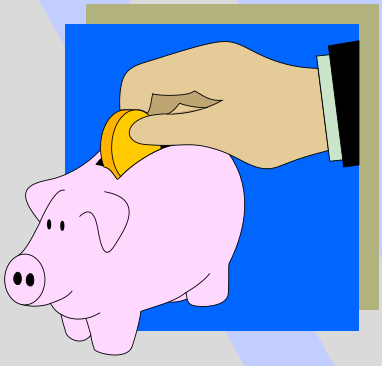
More Y and more jobs

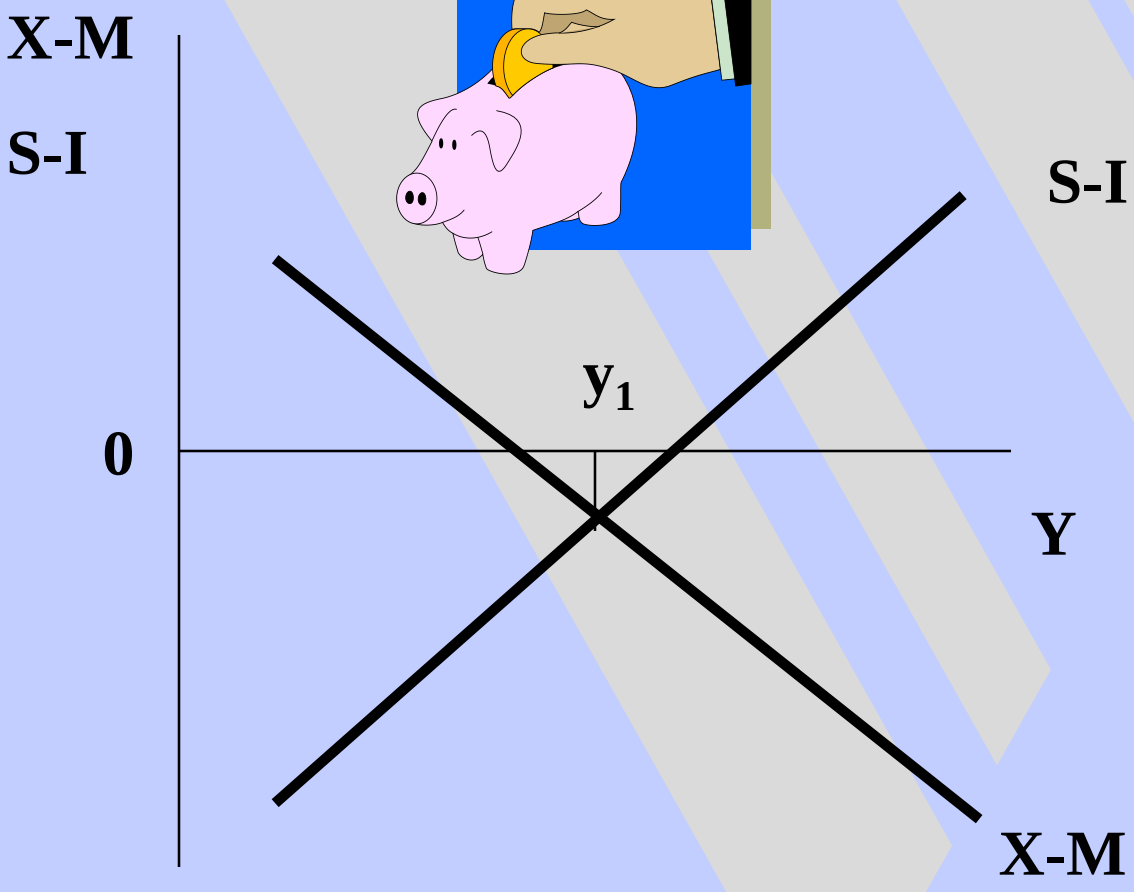
Which brings in more imports, lessening effect on X-M

Process stops where (behavioral) S - I = X - M

Case II: *Exogenous Increase in Saving*

If domestic residents suddenly save more, what curve will shift? In what direction?

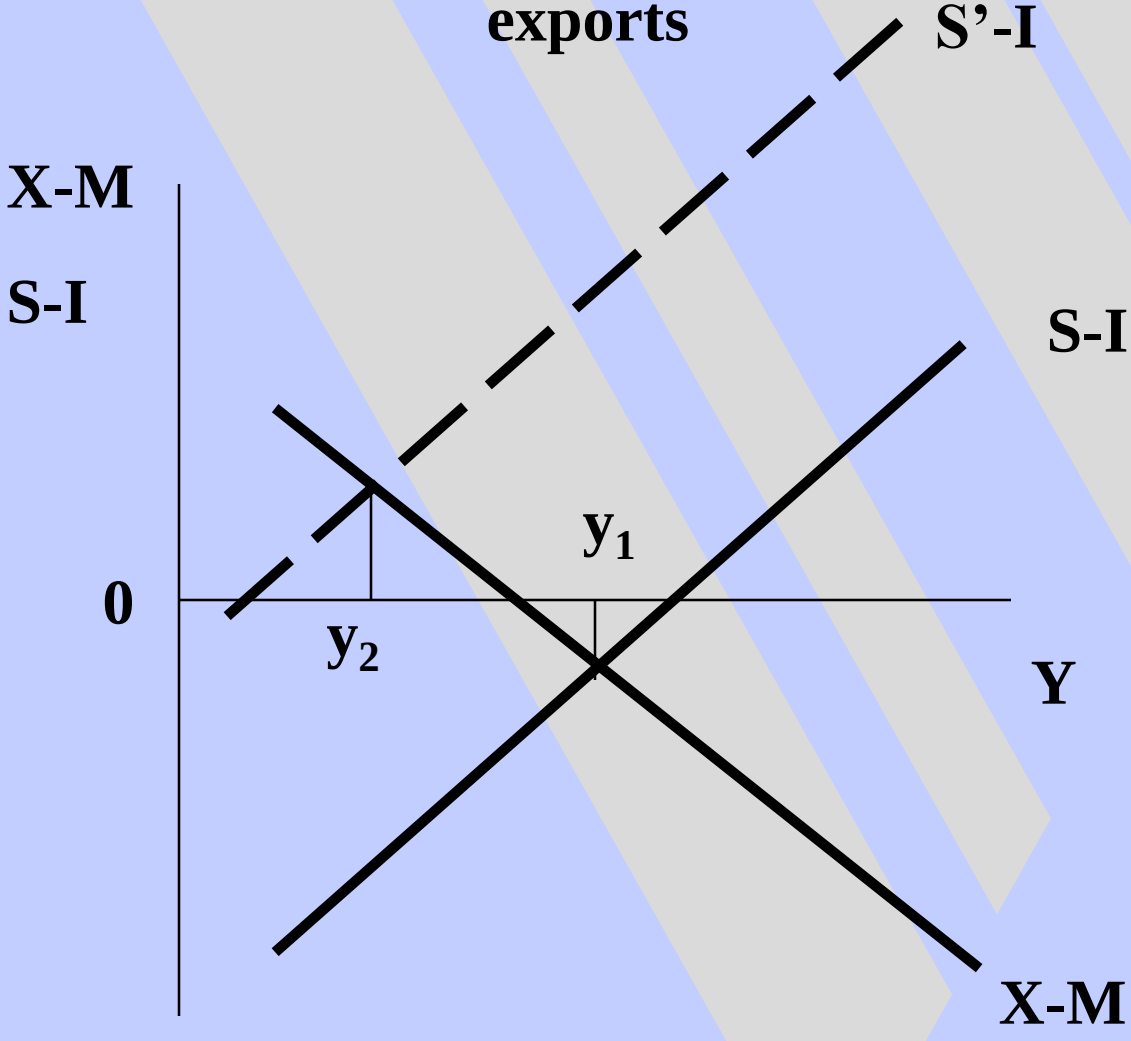




Case II: *Exogenous Increase in Saving*

Effects: 1) Fall in Y

2) Improvement in net exports

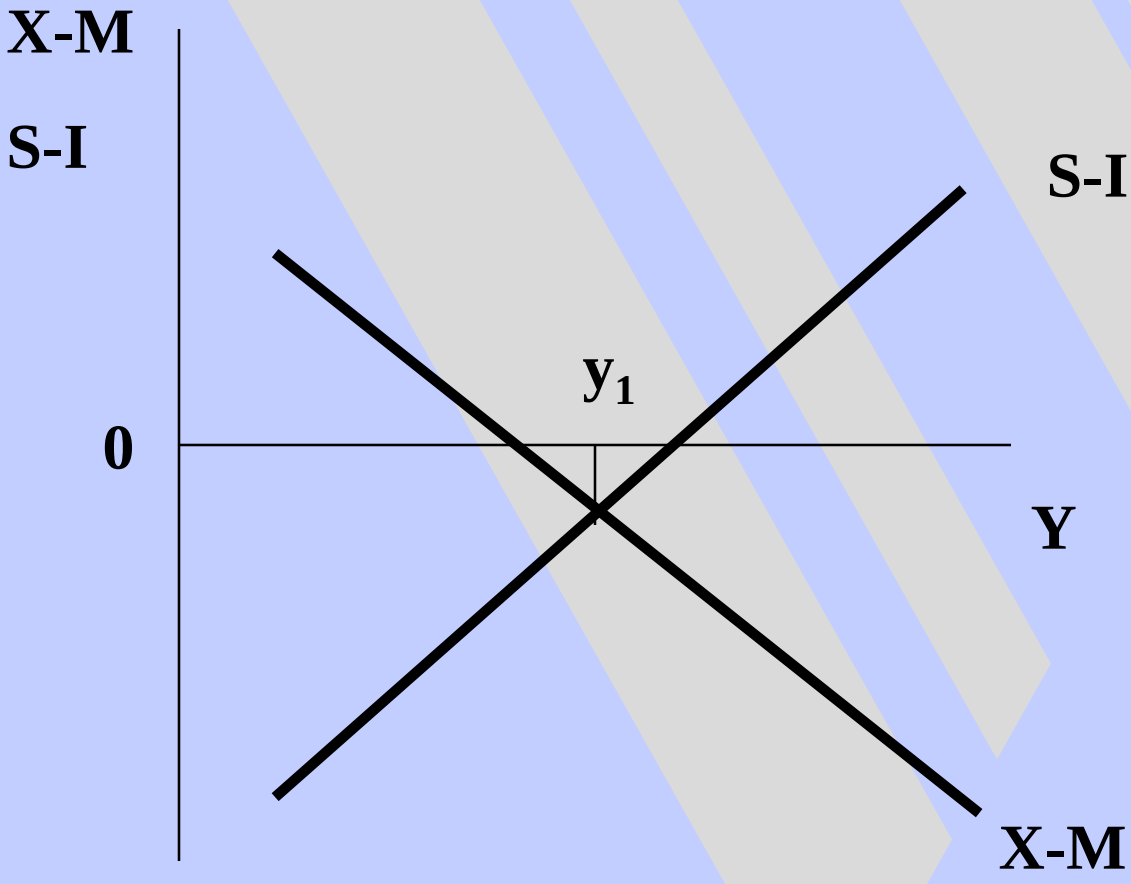


Case III:

Tariff Increase

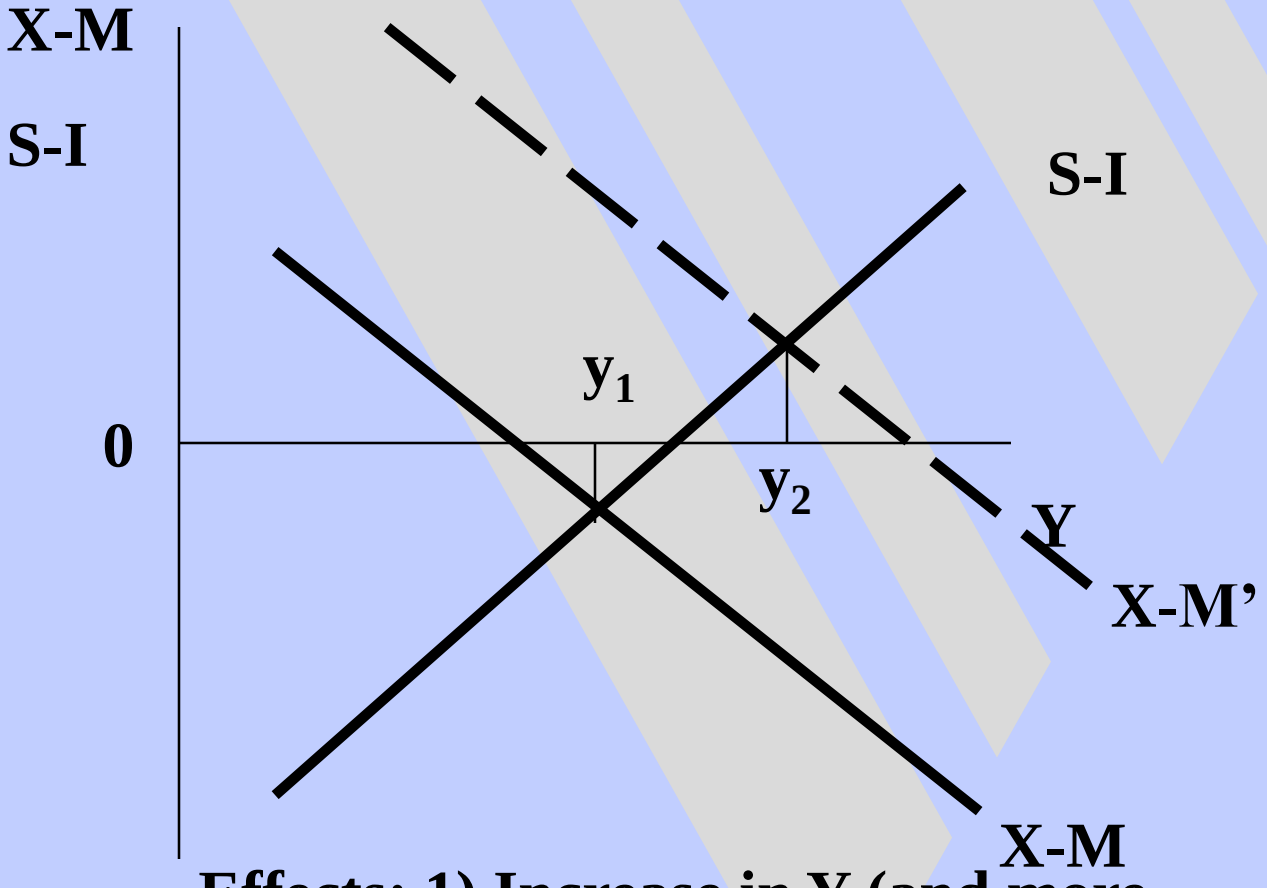
If tariff is raised (and limits imports), which curve will be affected?

Can the tariff create jobs?



Case III:

Tariff Increase

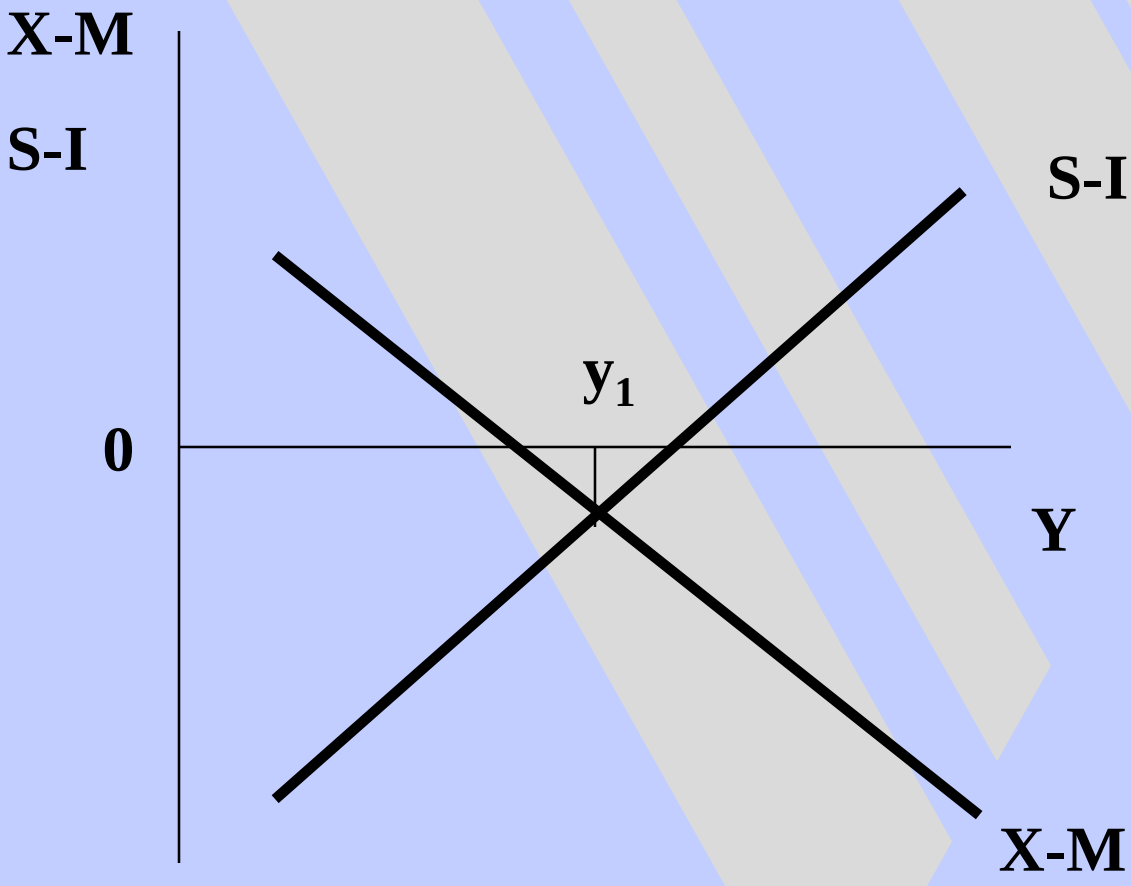


Effects: 1) Increase in Y (and more jobs)

2) Improvement in net exports

Case IV: *Devaluation*

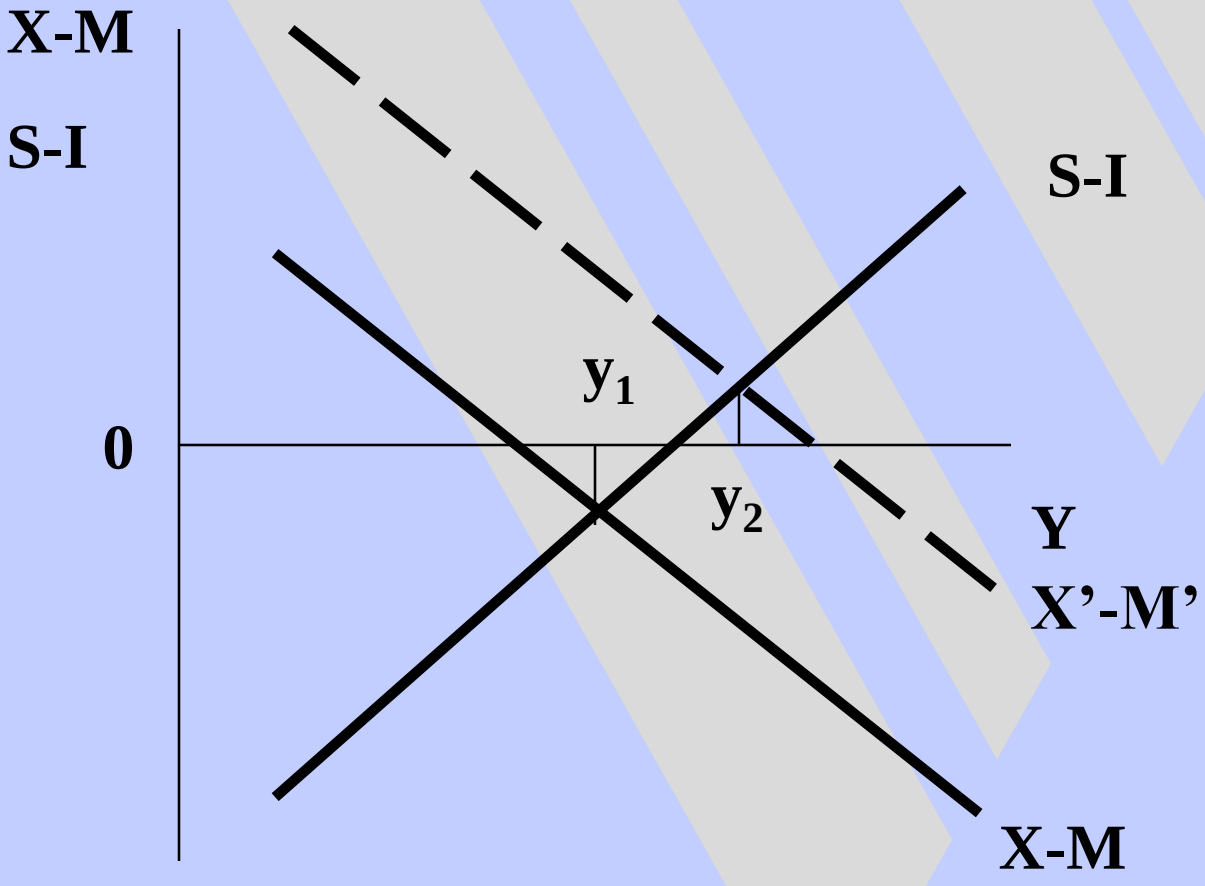
If country's currency is devalued, which curve will shift?



Case IV: *Devaluation*

Effects: 1) Increase in Y

2) Improvement in net exports



Introducing Fiscal Policy

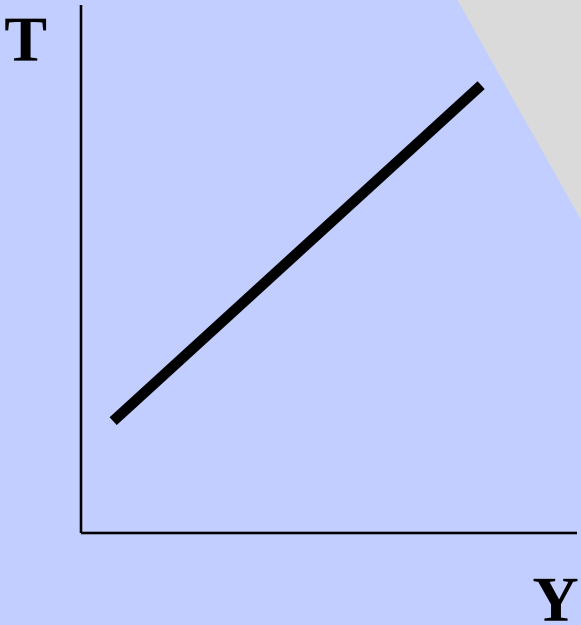
Budget = T - G

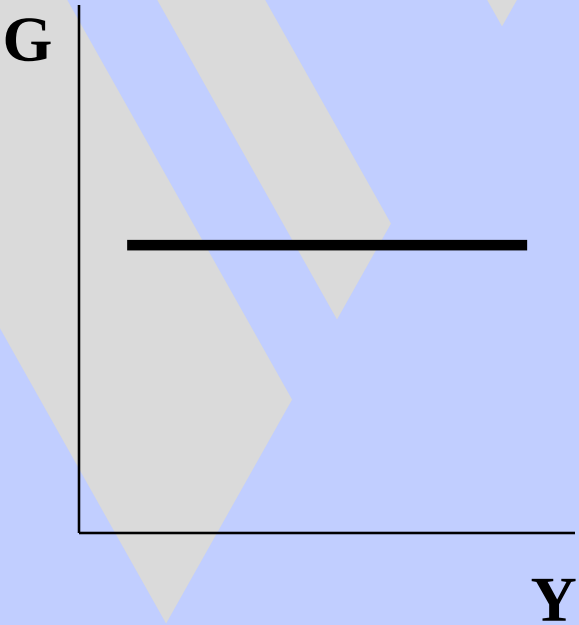
where T = taxes

and G = government spending

Assumptions:

- **dT/dY > 0; G is exogenous**





Revised Identities

$Y \equiv C + I + G + X - M$ (product)

$Y \equiv C + T + S$ (income)

$C+T+S \equiv C+I+G+X-M$

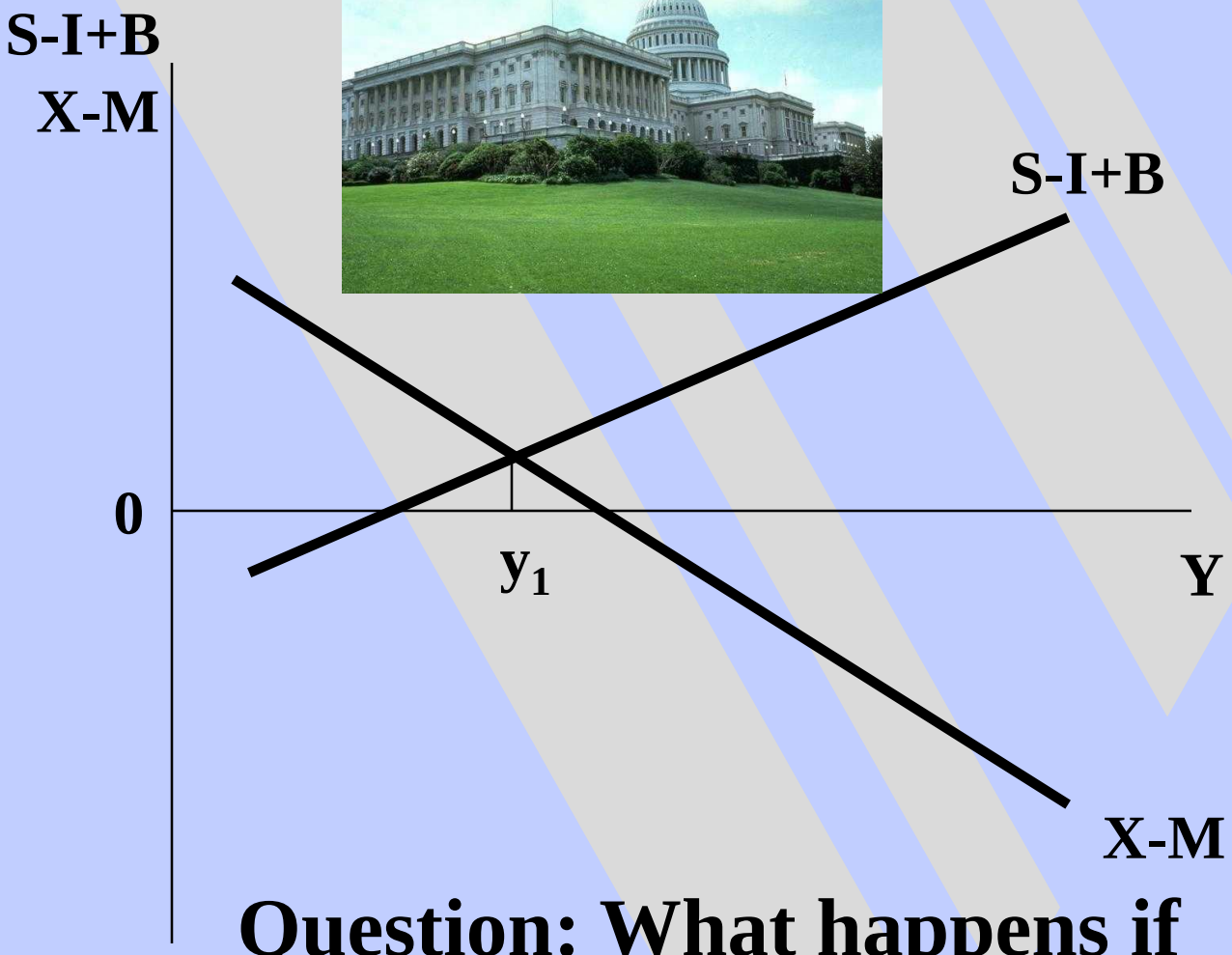
or: $S-I+T-G \equiv X-M$

---

or: $S-I+B \equiv X-M$

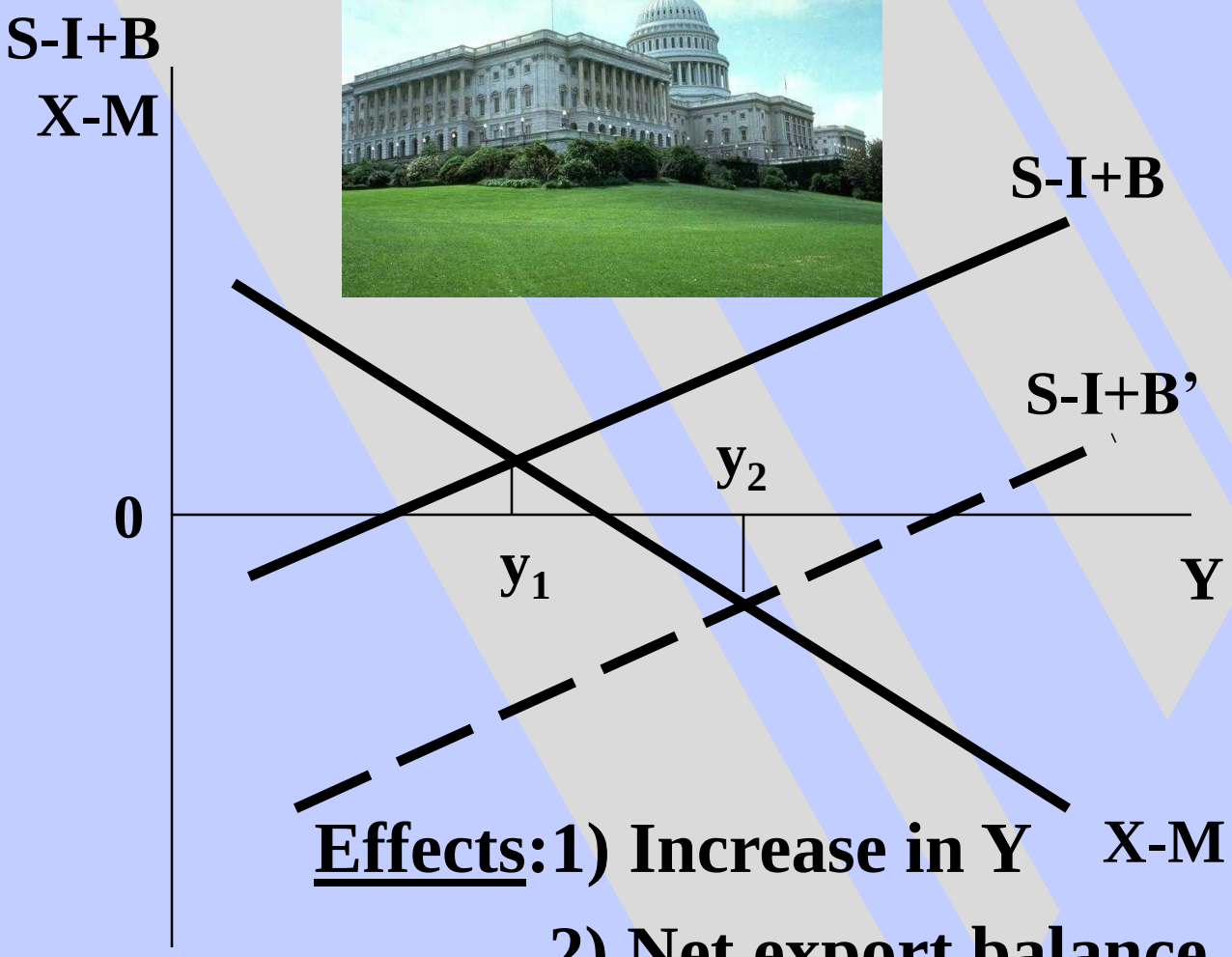
<u>Question</u>: What is the slope of the S-I+B function? Positive or negative?

Diagram with Fiscal Policy Added



<u>Question</u>: What happens if government increases spending? (Expansionary policy)

Diagram with Fiscal Policy Added



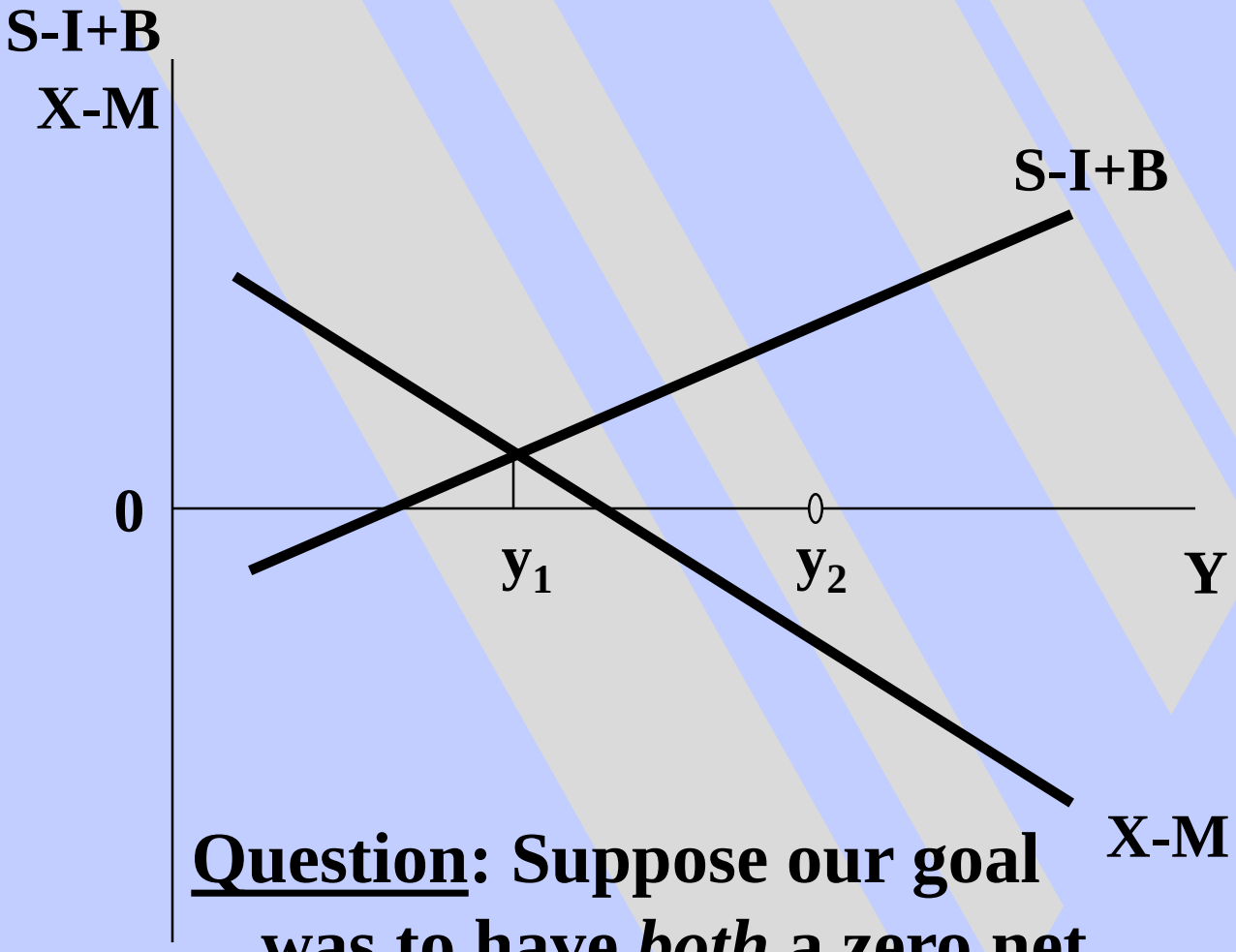
<u>Effects</u>:1) Increase in Y

2) Net export balance is reduced

<u>Question</u>: What does this example tell you about IMF prescriptions of fiscal austerity?

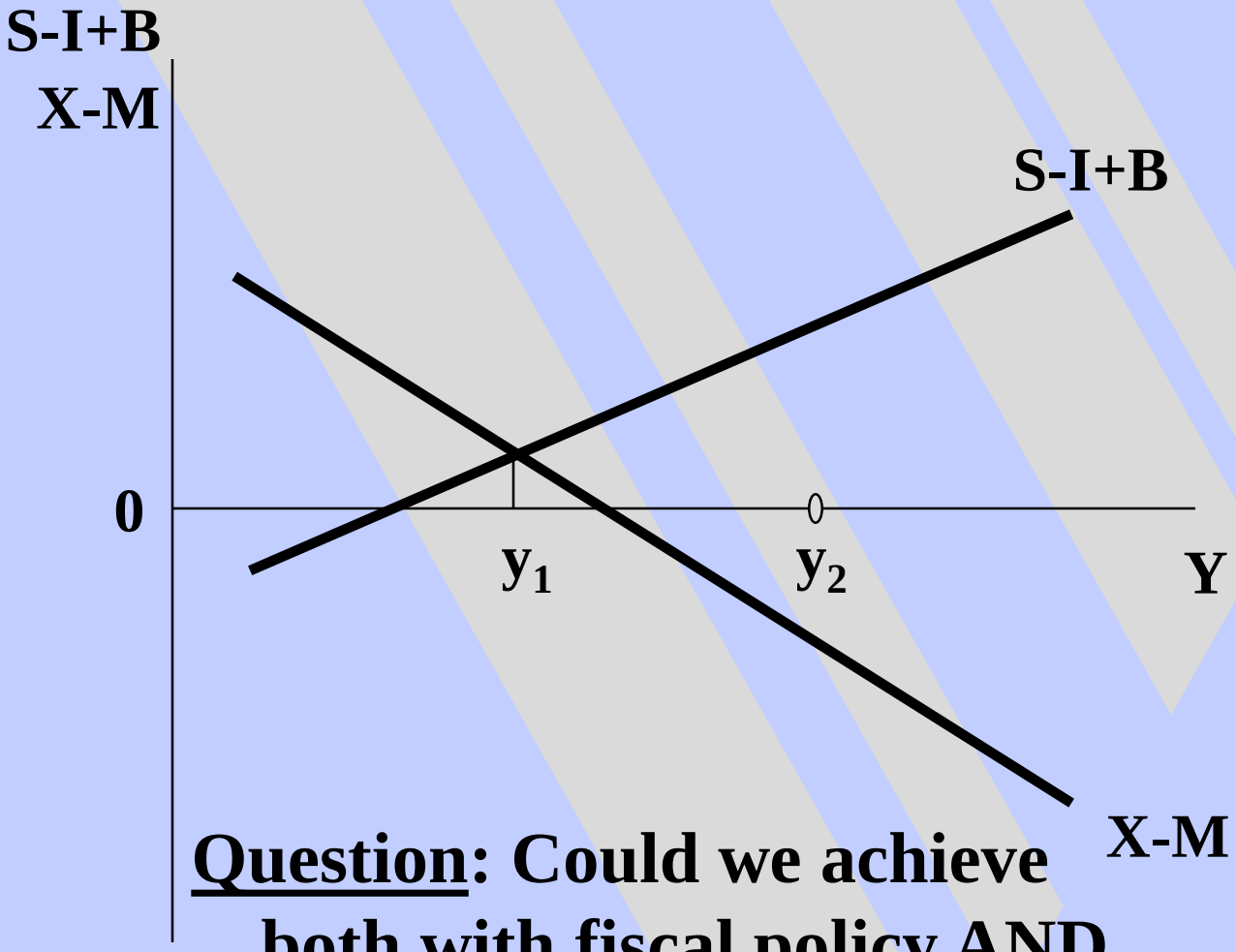
Argentina: Dec. 2001

Use of Fiscal Policy



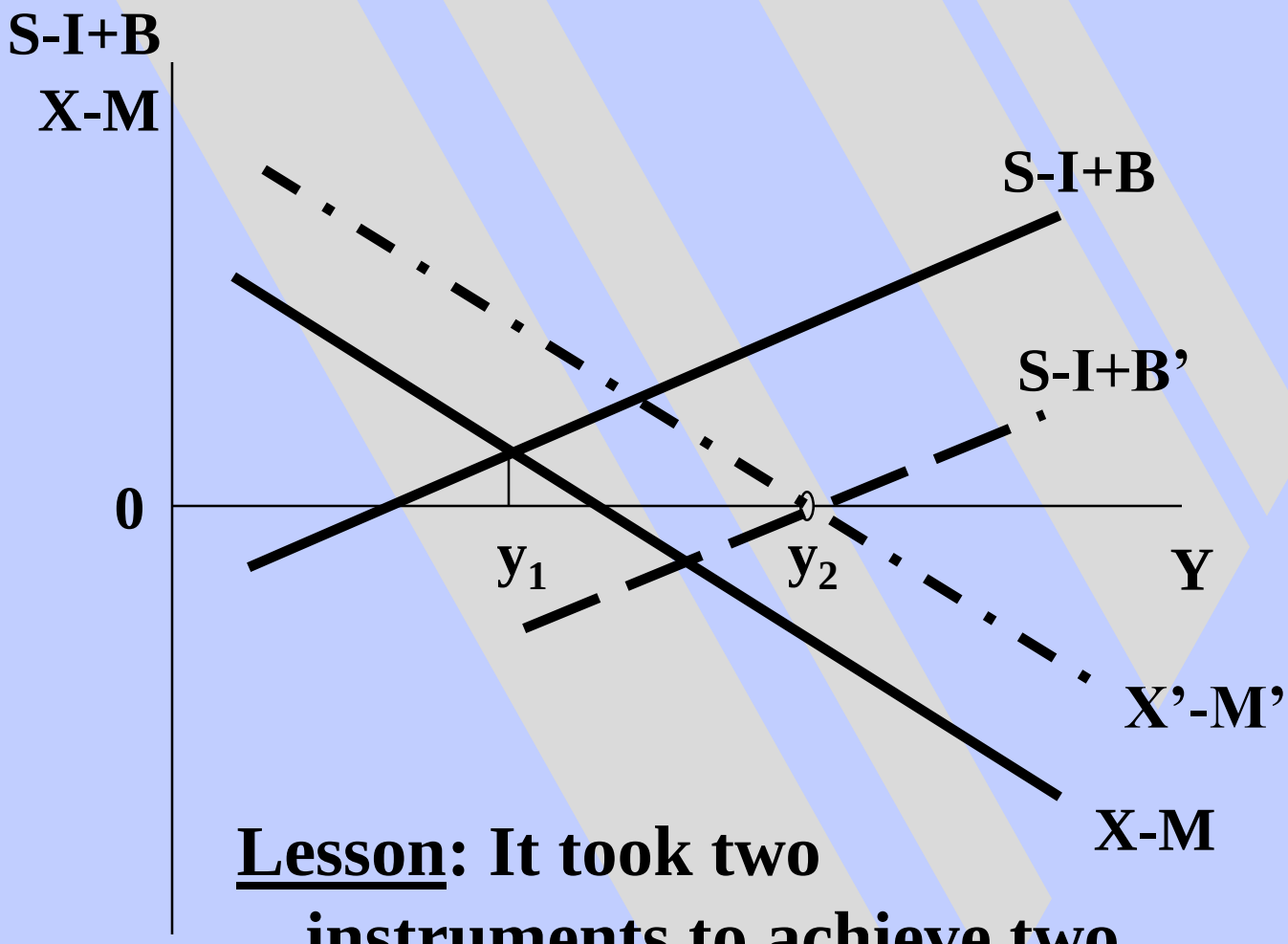
<u>Question</u>: Suppose our goal was to have *both* a zero net export balance *and* the economy operating at level y_2. Could we achieve both with fiscal policy alone?

Use of Fiscal Policy



<u>Question</u>: Could we achieve both with fiscal policy AND exchange rate policy?

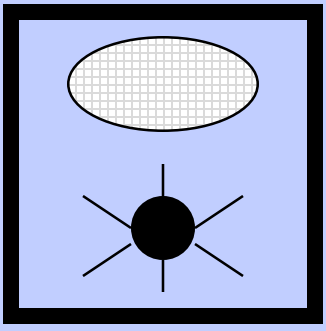
Use of Fiscal Policy and Exchange Rate Policy



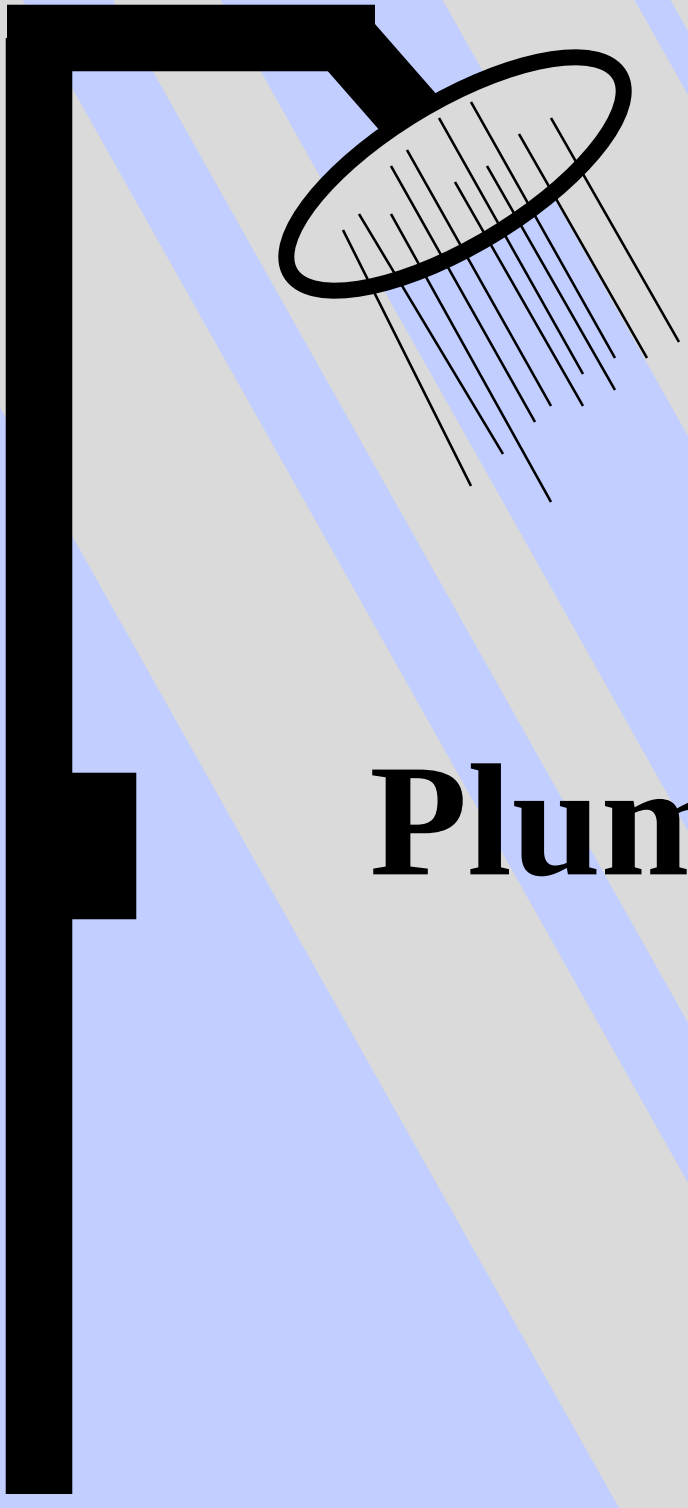
<u>Lesson</u>: It took two instruments to achieve two goals.

In general, it takes at least "n" instruments to achieve "n" goals.

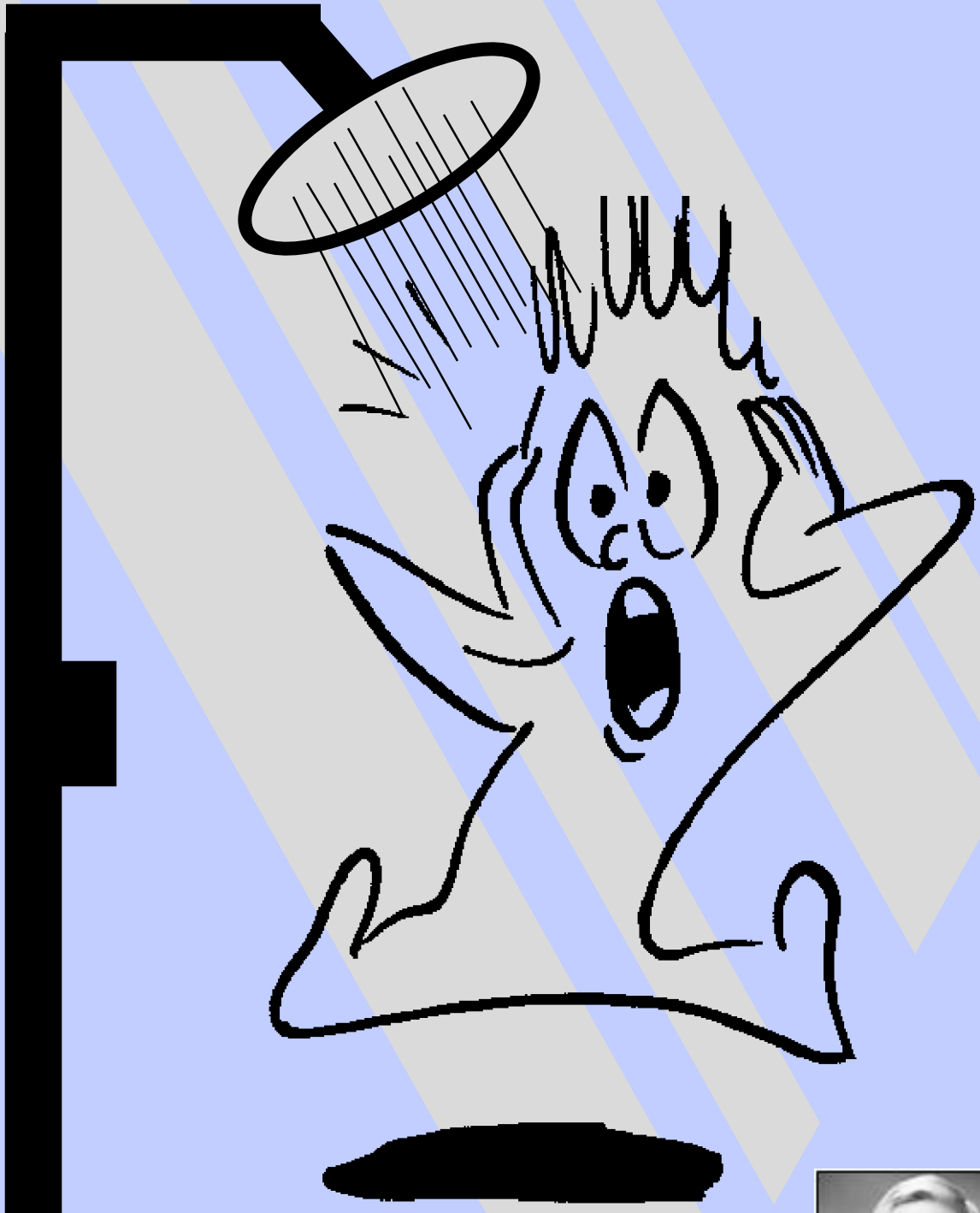
Tinbergen's Rule



Radio



Plumbing



Alfred Moen: 1925-2001

Inventor of Single-Handle Faucet

In general, it takes at least "n" instruments to achieve "n" goals.

Tinbergen's rule

Why "in general"? Could there be cases where one instrument could achieve two goals?

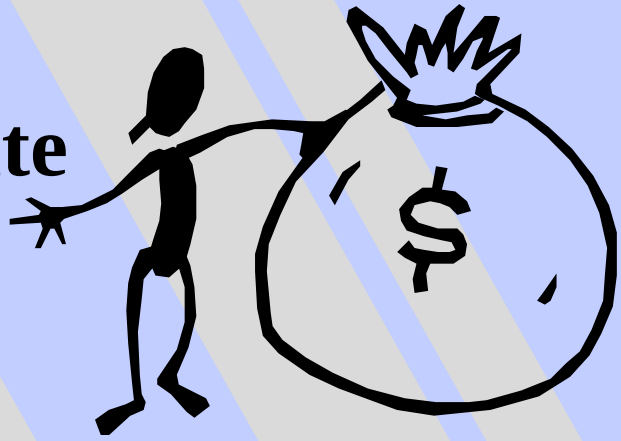
Why "at least"? Could there be cases in which two instruments are insufficient to achieve two goals?

Happy Birthday

Jan Tinbergen

April 12, 1903

Introducing Monetary Policy



Let r = interest rate

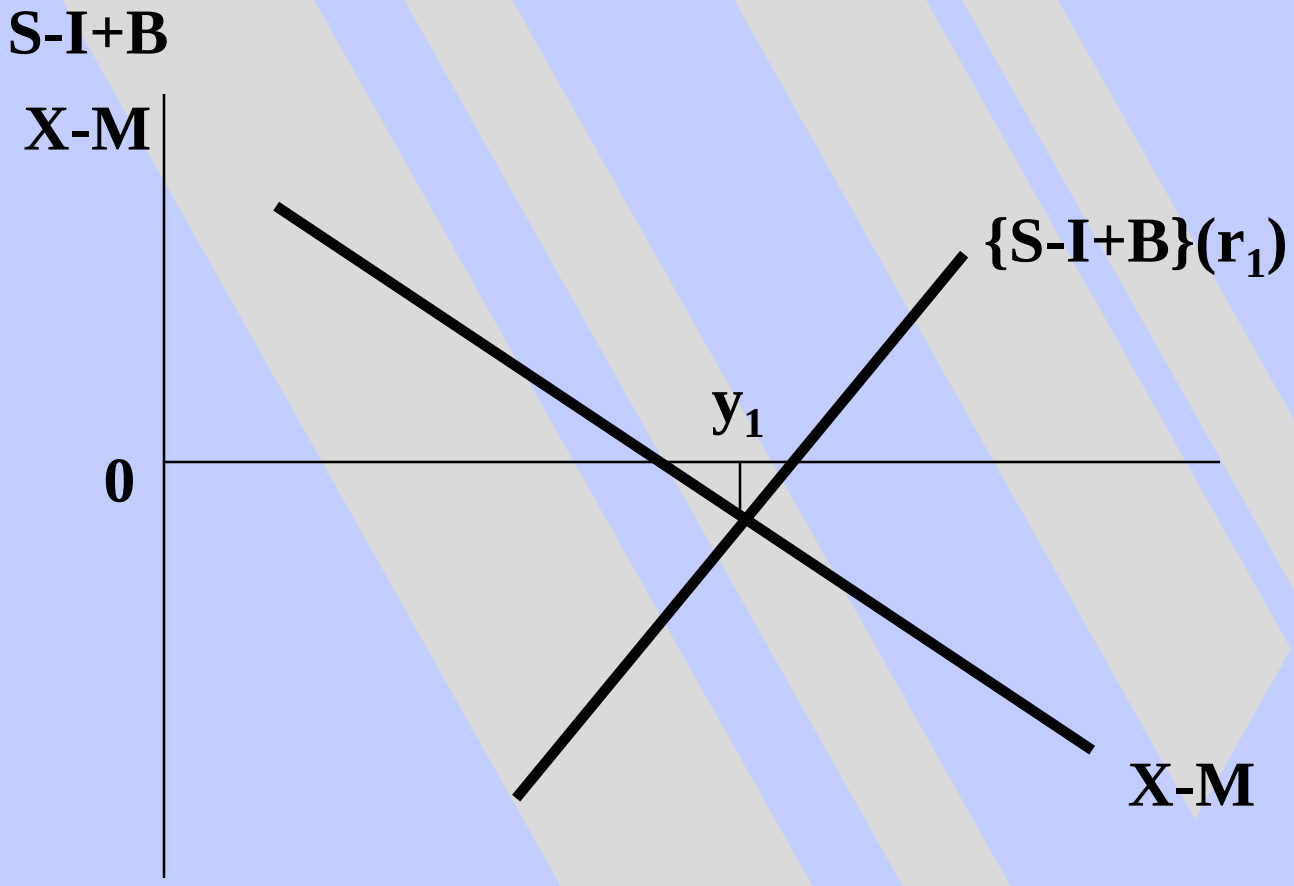
Internal effects:

dS/dr > 0 dI/dr < 0

External effect:

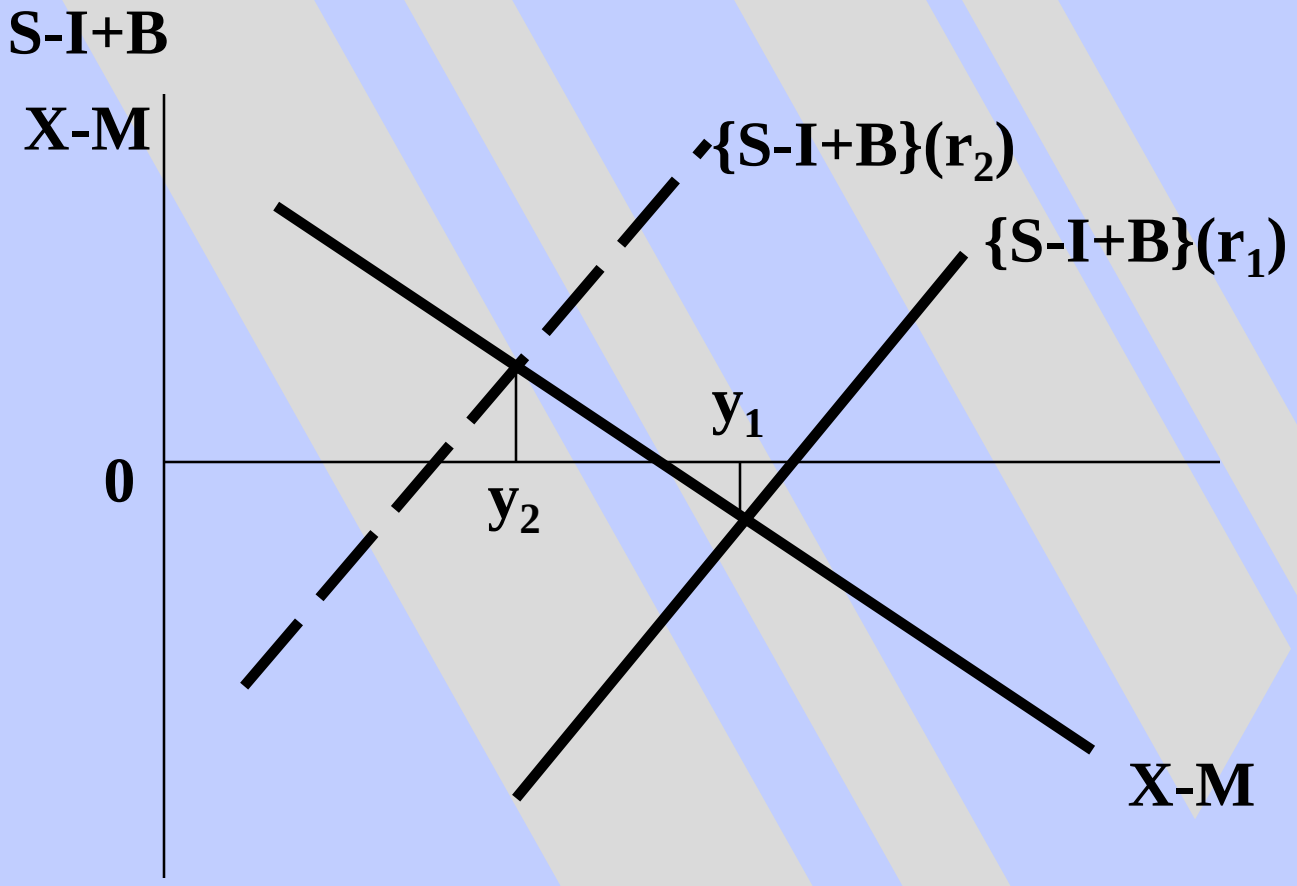
An increase in r tends to attract foreign financial capital and retain domestic financial capital. What does this effect imply about the exchange rate?

Monetary Policy with Fixed Exchange Rates



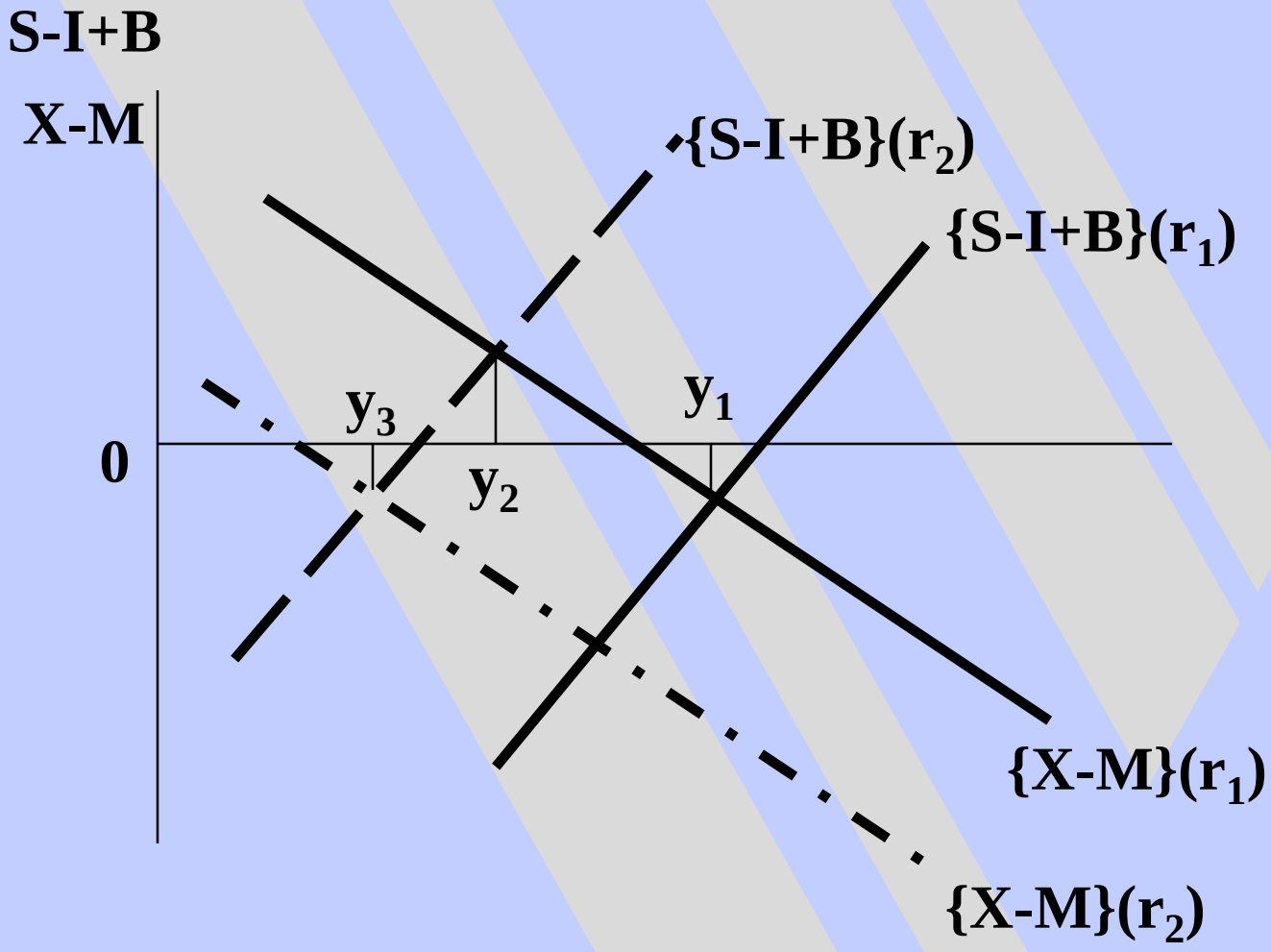
<u>Question</u>: What happens if we "tighten" monetary policy (raise r)?

Monetary Policy with Fixed Exchange Rates



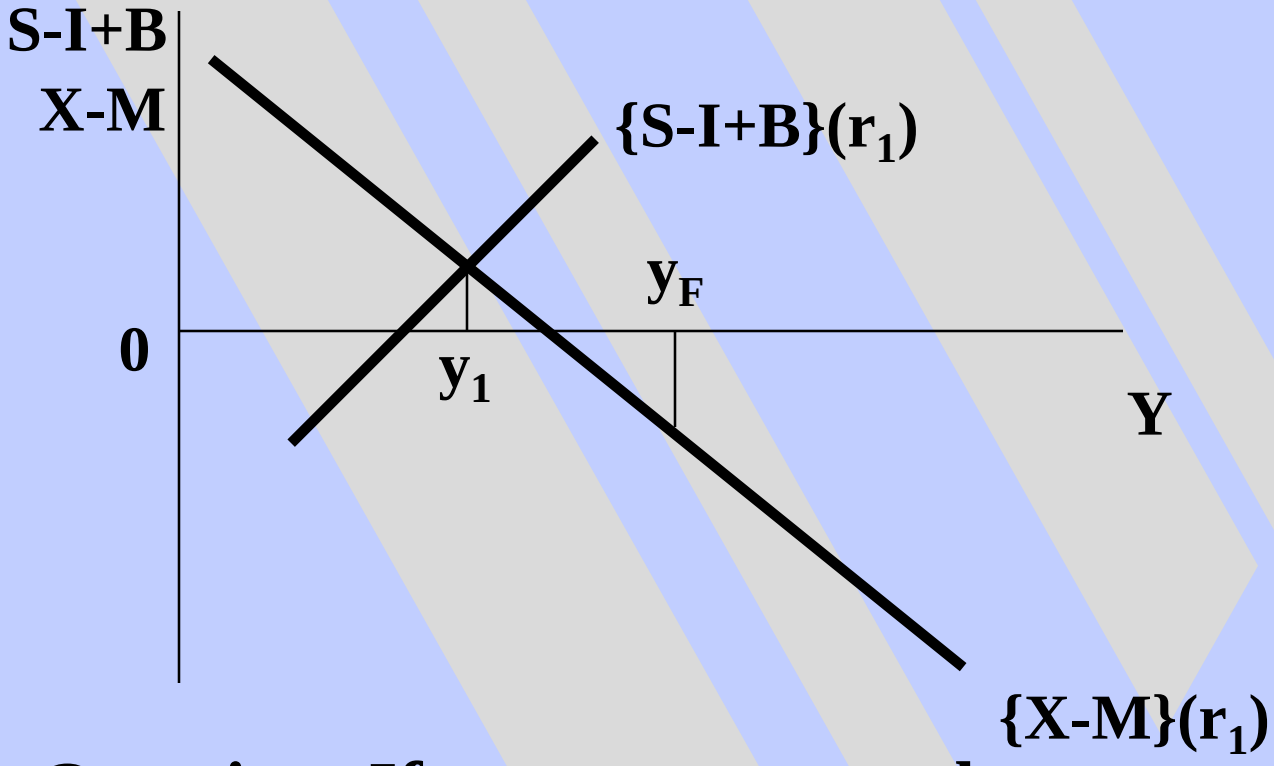
<u>Question</u>: What might have happened if exchange rate had been flexible?

Monetary Policy with Flexible Exchange Rates



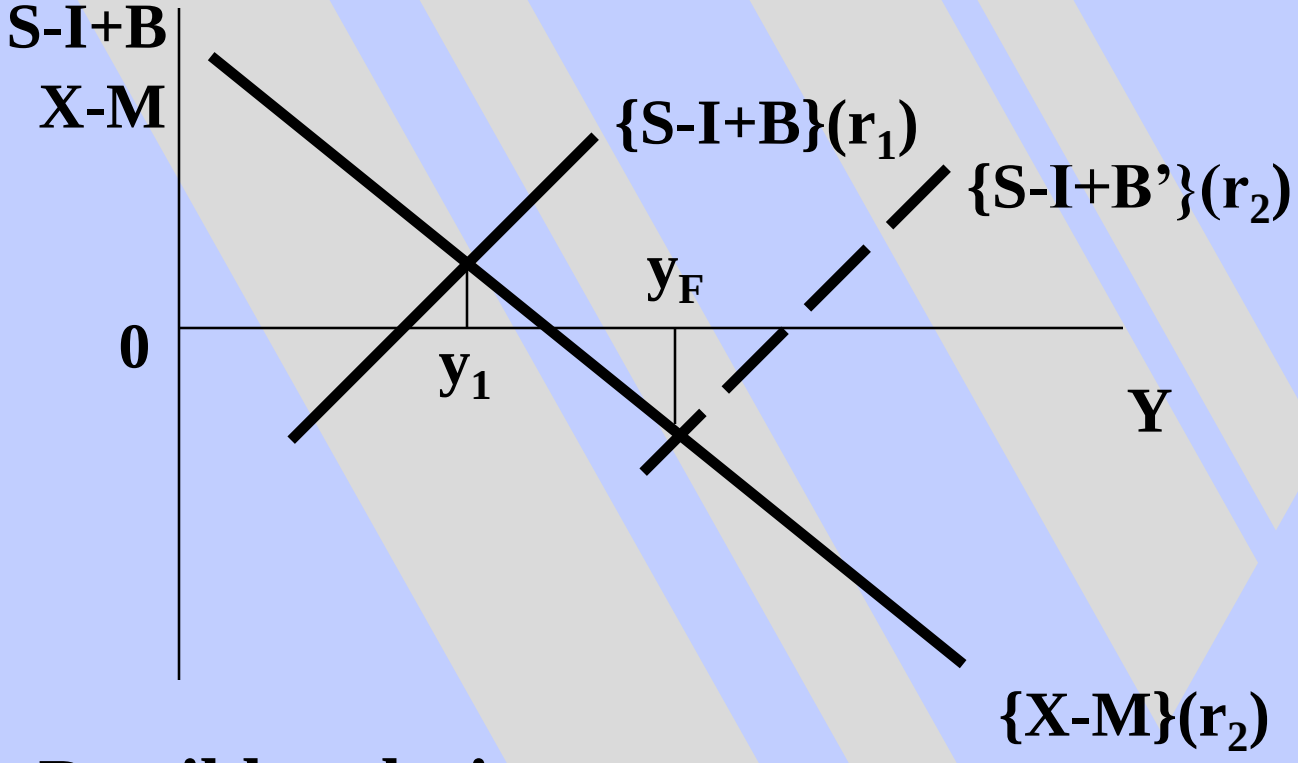
<u>Lesson</u>: Monetary policy is more powerful with regard to Y under flexible exchange rates.

Coordination of Monetary and Fiscal Policy with Fixed Exchange Rates



<u>Question</u>: If we try to expand to y_F, the net export balance will deteriorate. How could we adjust monetary and fiscal policy to maintain currency demand and achieve y_F?

Coordination of Monetary and Fiscal Policy with Fixed Exchange Rates



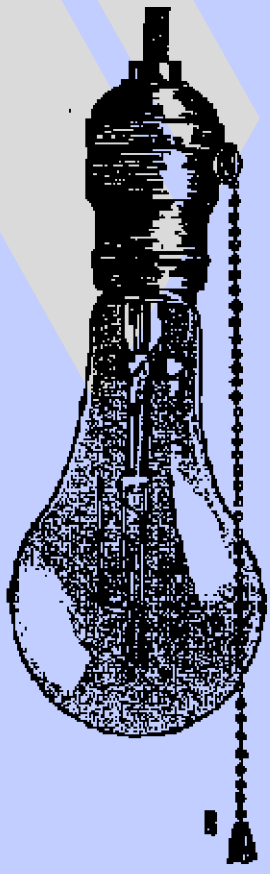
<u>Possible solution</u>:

1) ***Raise r*** **(tighten monetary policy) to attract and retain financial capital**

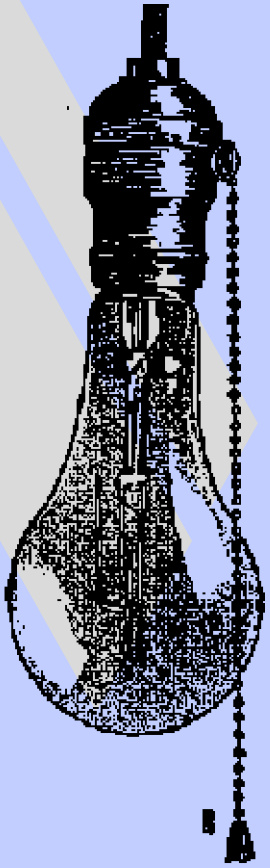
2) ***Lower B*** **(adopt expansionary fiscal policy) to offset contractionary effect of higher r.**

Shedding More Light on Monetary Policy and the Earlier Analysis of the Gold Standard and Modern Fixed Exchange Rate Systems

- **In the earlier gold standard and modern examples, a change in relative national price levels - induced by monetary policy - was the adjustment mechanism.**
- **The fix-price macro model, in contrast, emphasized adjustment on the real side (through changes in national output Y).**
- **How do these two approaches relate to each other?**



- **In the price adjustment models, a drop in a country's relative price, caused by "tight" money, made that country more competitive and improved its net export balance.**
- **In the fix-price model, a drop in a country's level of real output Y, caused by tight money, cuts its imports and improves its net export balance.**
- **In the real world, tight money will have a split effect, working through a combination of relative prices and reduced economic activity.**
- **In the real world, the price effect of tight money is likely to be relative disinflation rather than outright deflation.**



Summary: *Stimulants under the Fixed-Price Model*

- **Exogenous *increases* in the following variables stimulate the economy:**

  C, I, X, G

- **Exogenous *decreases* in the following variables stimulate the economy:**

  S, M, T, r

- **Other stimulants:**

  Devaluation

  Tariff increase

Summary: *Variables that Increase Net Exports*

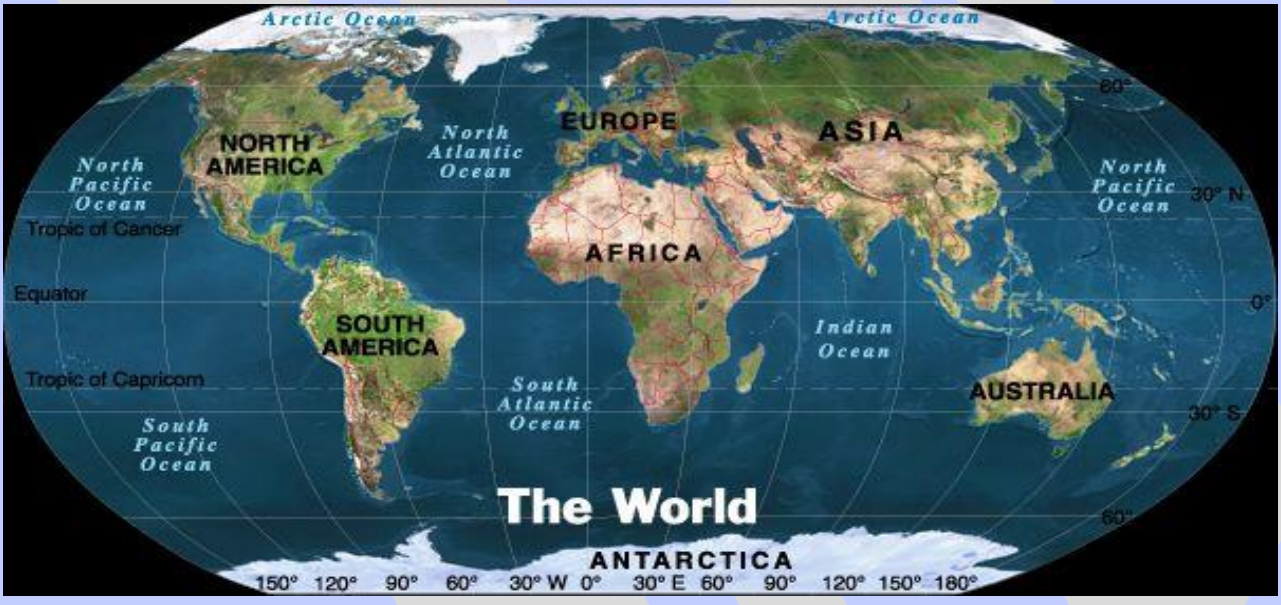
- **Exogenous increases in X, S, T**
- **Exogenous increase in r, *holding exchange rate constant***
- **Devaluation**
- **Tariff increase or other import limitation**
- **Recession**

Summary:

Other Lessons

- In general, it takes at least "n" instruments to achieve "n" goals
- An increase in r tends to raise S and lower I
- An increase in r tends to attract a net capital inflow
- The impact of r on Y will be greater under flexible exchange rates than under fixed exchange rates
- The Y effect of monetary policy in the fix-price model has the same impact on net exports (and currency demand) as relative prices in earlier models we have discussed

MGT. 205A



Daniel J.B. Mitchell

Ho-su Wu Professor

Anderson School

and

School of Public Affairs

Loose Talk So Far

- **Trade balance**
- **Net exports**
- **Capital inflow**
- **Deficit**

Solution

Study Balance of Payments Accounting!!!

Loose Talk So Far

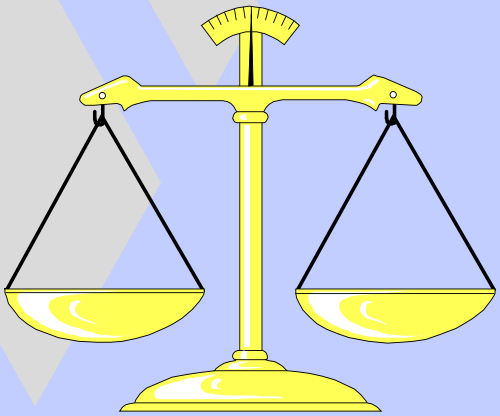
- **Trade balance**
- **Net exports**
- **Capital inflow**
- **Deficit**

Solution

Study Balance of Payments Accounting!!!

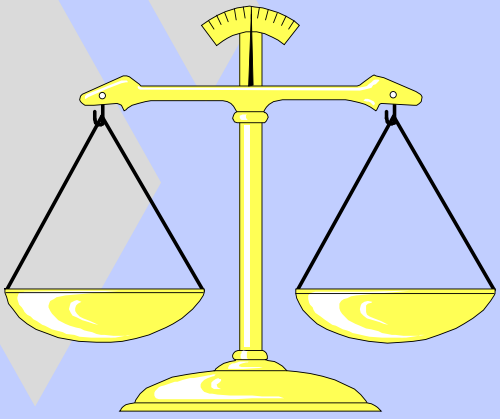
Balance of Payments:
Accounts and Accounting

"Is there an accountant in the house?"



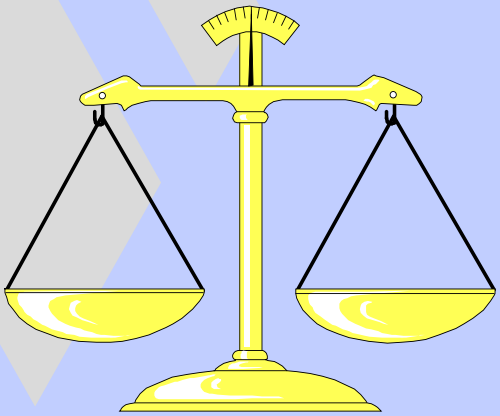
Balance of Payments:
Accounts and Accounting

"Who is our most creative accountant?"

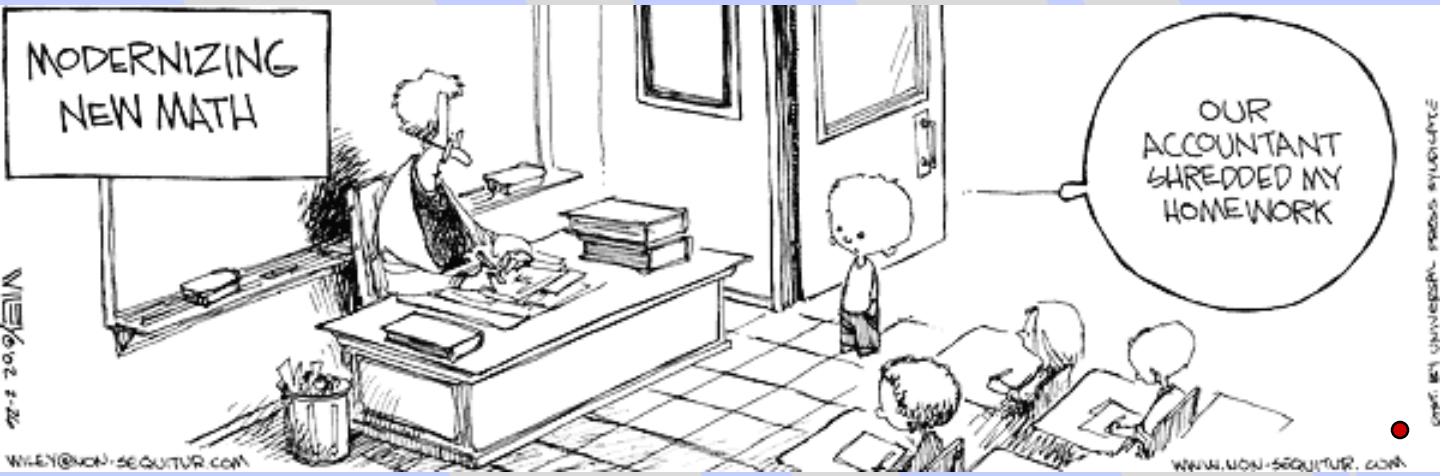


Balance of Payments:
Accounts and Accounting

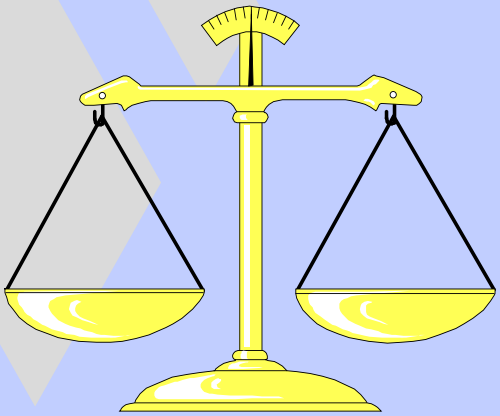
"Daddy doesn't know any magic tricks. Daddy knows accounting tricks."



Balance of Payments:
Accounts and Accounting

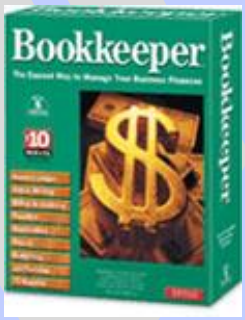


Arthur Andersen
1885-1947



Balance of Payments:
Accounts and Accounting

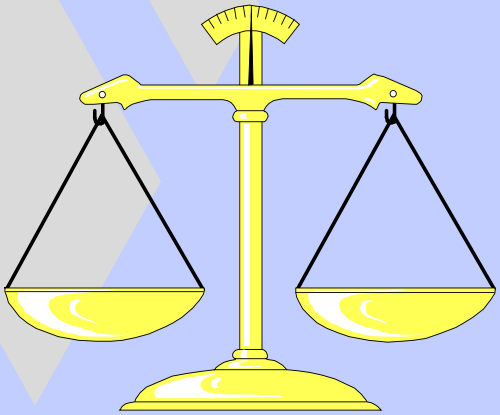
- **Flow accounting**
- **Double-entry bookkeeping**



Credits (cr or +)

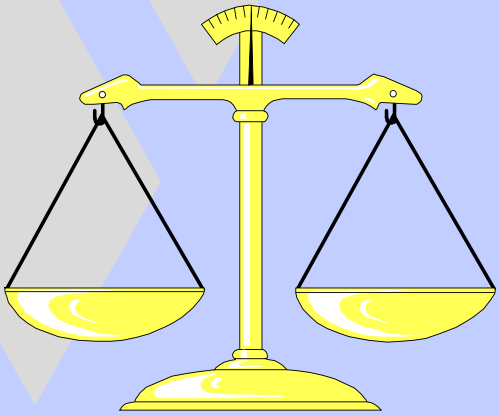
Debits (dr or -)

- **Credits on the LEFT!**

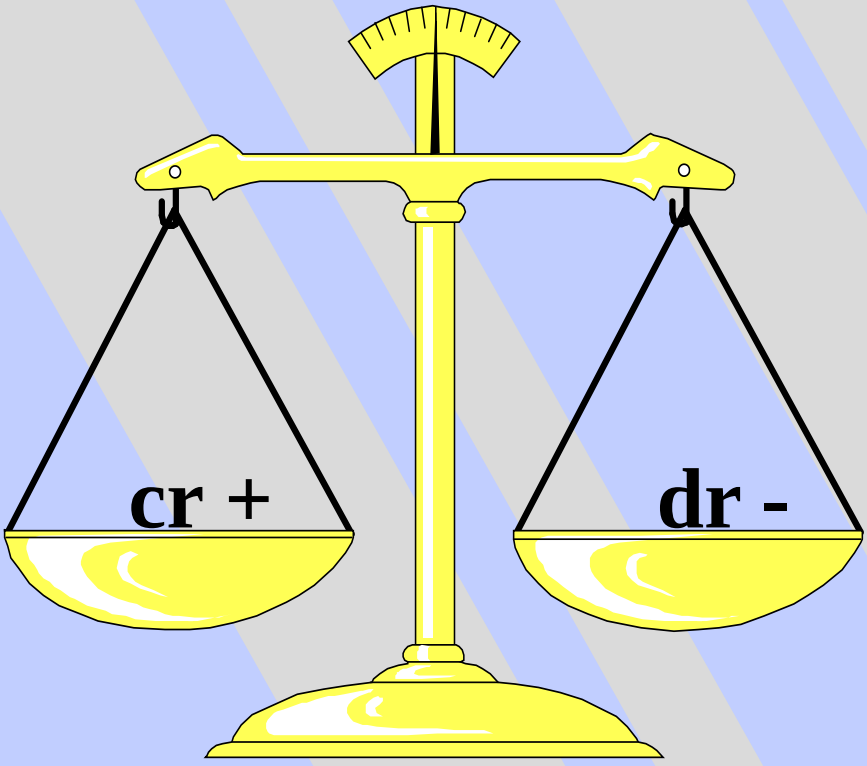


Balance of Payments:
Accounts and Accounting

Keep Left
Drive on the LEFT
Park on the LEFT
Remember to remain on the LEFT
when returning to the road
after parking or pulling over
KEEP LEFT



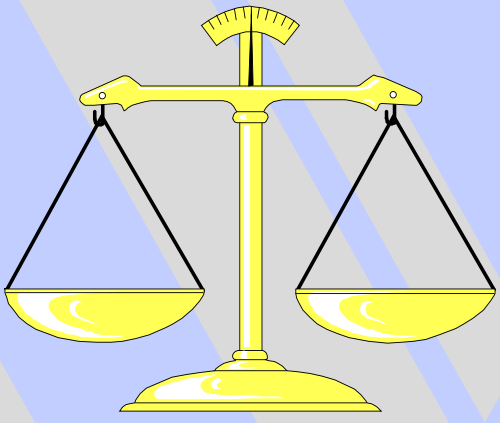
Since it is double entry...



...the credits must add up to the debits.

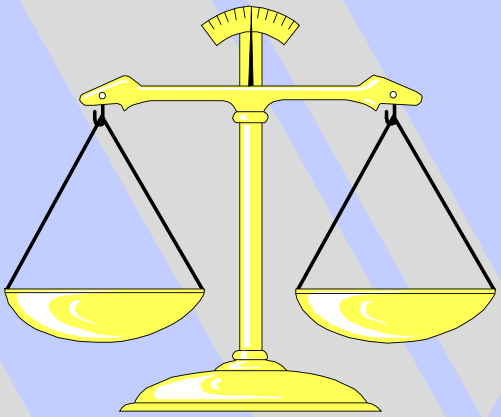
Types of Exports and Imports

- **Goods**
  - *Wheat*
  - *Cloth*
- **Services**
  - *Travel (tourism)*
  - *Transportation*
  - *Education*
  - *Insurance*
  - *Telecommunications*
  - *Royalties*



"Tell me again about royalties."

Types of Exports and Imports



- **Goods**
  - *Wheat*
  - *Cloth*
- **Services**
  - *Travel (tourism)*
  - *Transportation*
  - *Education*
  - *Insurance*
  - *Telecommunications*
  - *Royalties*
- **Income receipts and payments**
  - *Interest*
  - *Dividends*
  - *Reinvested earnings of multinational firms*

Conventions

Democratic convention of 1976

Republican convention of 1984

Conventions

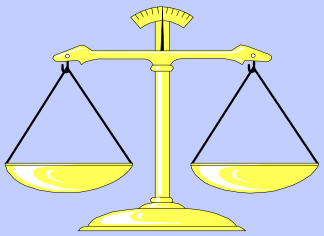
IBM sales convention of 1916

National Barbie Doll convention of 2001

Conventions of BoP Accounting

Exports of goods, services, income receipts, and monetary (govt.) gold = cr or +

Imports of goods, services, income payments, monetary (govt.) gold = dr or -

Capital inflow = an increase in our liabilities to foreigners or a decrease in our foreign assets = cr or +

Capital outflow = a decrease in our liabilities to foreigners or an increase in our foreign assets = dr or -